

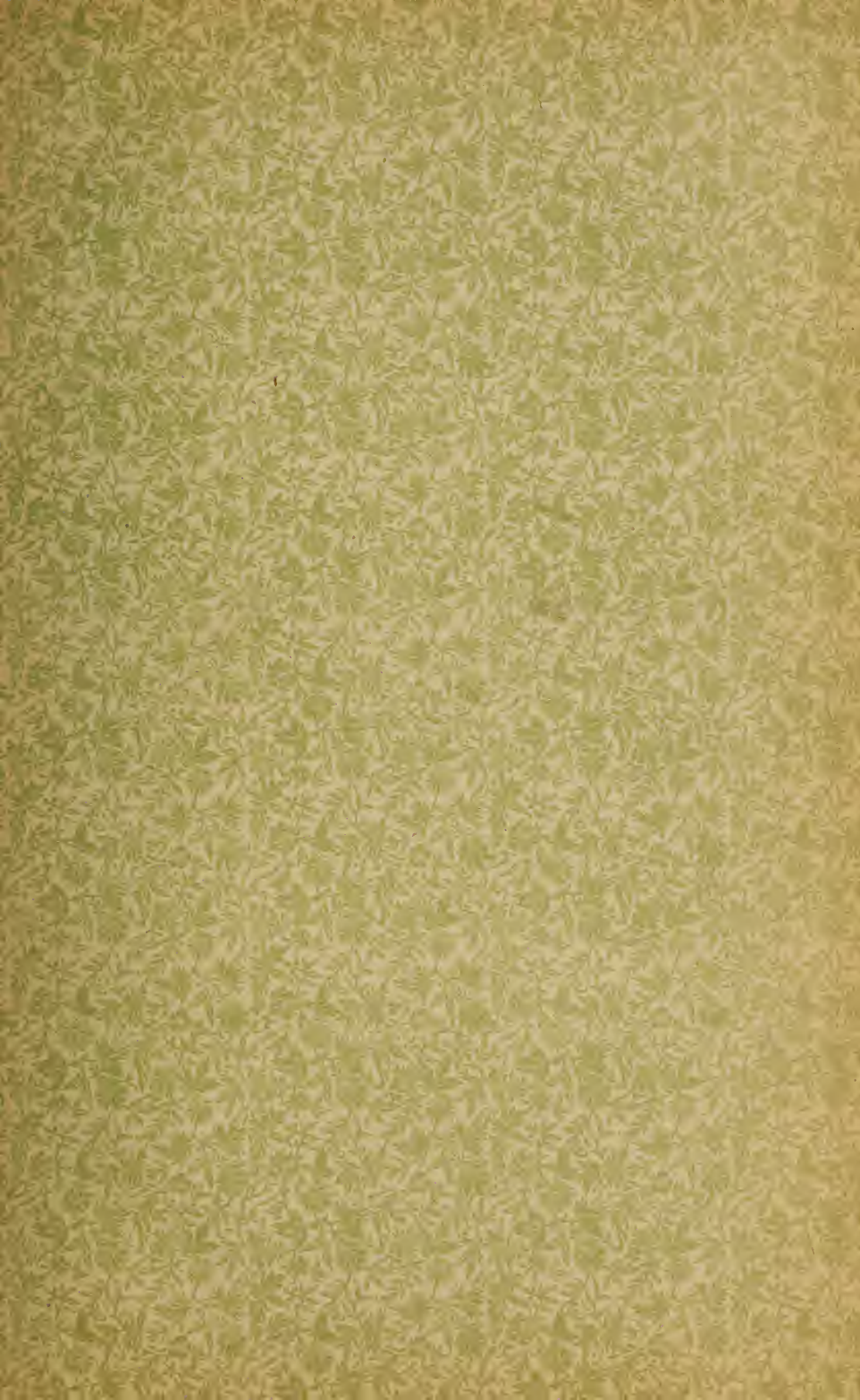


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The Care—Feeding of the Baby.



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The
Care—Feeding of the Baby.



A Handbook

—FOR—

Mothers, Midwives and Nurses.

—BY—

FERDINAND HERB, M. D.



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1907

TO
THE MEMORY OF
MY DECEASED MOTHER
IN DEEPEST VENERATION
THIS BOOK IS
MOST AFFECTIONATELY
DEDICATED.

PREFACE.

The trend of human endeavor now-a-days is to prevent rather than to cure sickness. To this end it proved necessary, first of all, to educate the masses. Great strides have been made in this direction. The nature and prevention of tuberculosis, malaria, yellow fever and other pestilences are becoming more and more widely known. Curiously, however, little, comparatively very little, knowledge, indeed, has found its way to the people as to that part in the field of prevention which in fact requires the most urgent attention, namely, the care and feeding of infants. It is at this tender age that the foundation for the future health and happiness of the individual is laid, but it is also at this time that the gravest and most serious mistakes are constantly made. This statement may seem exaggerated. But it is not! Daily experience shows it to be correct. Amazing is the imprudence, to say the least, with which the care and feeding of infants is handled in the average family.

It is, however, not the mother who is to be blamed for this unfortunate condition. In the overwhelming majority of instances, she is eager to learn. It is the lack of proper sources wherefrom information and sound knowledge can be gathered. Many books, we admit, are on the market, but few meet the wants of an enlightened public. They either teach only general principles and advise "to call the doctor" for every, even the most trifling, ailment, or give in a crude and uninspiring way a multitude of prescriptions which a conscientious public does not care or dare use for want of proper instructions.

Either book is, of course, unsatisfactory to that class of the people who most urgently need the in-

formation, as the practical benefits derived therefrom do not seem to warrant the expenditure necessary to procure a copy. Most of those who buy such books are not willing to call the doctor for every little matter, nor do they want to take the risk of using remedies without specific information. They expect, and have a right to expect, that a book worth buying should give instructions up-to-date, clear and in simple, plain English—instructions which include not only prevention but also treatment, so that they may be followed and made use of when difficulties arise.

Such a book we have endeavored to give, treating of the life of the child from birth to the end of the second year. It includes the care and feeding of infants and those disturbances of digestion closely connected therewith that should be known to every mother. All technical expressions have been avoided as far as possible. The language has been chosen so as to be easily understood by every mother. Frequent hints as to the prevention and recognition of diseases and full details as to the treatment of existing ailments are special features. Always, however, has attention been called to the seriousness of the trouble, if it seemed warranted. All prescriptions are given in such a form that any druggist can fill them.

The last feature of the book, we expect, will arouse some opposition from medical quarters. The majority of physicians, who in their present struggle with the manufacturers of patent medicines demand the abolition of secrecy and a fair play above board, will not object to be measured with the same stick with which they measure others. Some of them, however, will raise their voices and denounce the so-called "Self-Drugging." This, of course, is done for selfish purposes only. We consider an intelligent public, if carefully instructed through the pages of a reliable book, fully as competent to administer remedies as if instructed by the physician in person.

Yes, we venture to assert that in many instances it is better fitted to do so, since few physicians care to spend the time for the minute details of instruction so essential in the battle against disease. Therefore, we would consider the book as incomplete and of comparatively little value, especially for the farmer for whom it is mainly intended, if the prescriptions were omitted.

By the foregoing we do not mean to say that we advise against the employment of the physician. By no means! The consultation of a competent and conscientious medical adviser will often lend stability to the otherwise wavering mother. On the other hand, his employment does not make the book superfluous. Both supplement each other. The book relieves the busy practitioner of the burden of giving time-consuming details and allows the mother to control and pass judgment upon the carefulness and thoroughness of the medical attendant, two advantages which commend the book to every mother, rich or poor.



CONTENTS.

PART I—CARE OF THE INFANT.

CHAPTER 1.

First bath. Pages 3 to 4.

CHAPTER 2.

Care of the rest of the navel-string. Inflammation of the navel: cause, prevention and treatment. Bleeding of the navel: treatment. Discharges from the navel: treatment. Rupture of the navel: causes, prevention and treatment. Pages 5 to 18.

CHAPTER 3.

Care of the eyes of the new-born. Inflammation of the eyes of the new-born. Simple catarrh of the eyes of the new-born: prevention, symptoms, treatment. Specific inflammation of the eyes of the new-born: cause, prevention, symptoms, treatment. Pages 23 to 32.

CHAPTER 4.

Appearance of the child after birth: children born at term, born too early, color of the skin, length of the body, form of the head, navel, genitals, opening of the bowels, back. Pages 33 to 35.

CHAPTER 5.

Functions of the body of the child: crying, coughing and sneezing, muscular movements, eyes, position of the legs, hic-cough, evacuation of the bowels, black disease of the new-born, urine, changes in the skin after birth, swelling of the breasts, sleep. Pages 36 to 41.

CHAPTER 6.

Nursing of the child. Nursery: choice of the room, light and sunshine, walls, floor, furniture, toys, bed of the baby, playground, temperature of the air, humidity of the air, heating, ventilation, cleaning. danger from insects. Pages 42 to 49.

CHAPTER 7.

Care of the skin. Baths. Care of those places of the skin that are predisposed to sickness—skin between the legs and the seat. Head: care and treatment, if diseased. Pages 50 to 58.

CHAPTER 8.

Care of the mouth. Pacifiers. Thrush: causes and treatment. Pages 59 to 64.

CHAPTER 9.

Quiet life for babies. Sleep at night. Regularity in taking nourishment. Regularity as to the secretions of the body (stool and urine): education to cleanliness. Hardening of children. Outdoor life. Physical exercise. Pages 65 to 71.

CHAPTER 10.

Crying of children. Soothing syrups. Pages 72 to 75.

CHAPTER 11.

Signs of a normal development. Increase in weight. Development of the head. Development of the muscles: lifting up of head, standing, walking, etc. Development of the teeth. Too early and too late development of the teeth and their significance. Teething sicknesses. Pulse: how to feel and where to feel, number of beats, etc. Breathing. Temperature: importance, where to measure, reading of the instrument, normal temperature, treatment of the thermometer, advantages derived from the use of the thermometer in case of sickness. Appearance and consistency of the evacuations of the bowels: with breast-fed infants, with infants fed on cow's milk, buttermilk, proprietary foods, dark or green passages, slime or slime and blood in passage, dyspeptic passages, foul smelling passages, thin and watery passages. Pages 76 to 100.

PART II—FEEDING OF THE INFANT.

CHAPTER 12.

Importance of breast-feeding. Insufficient development of the breast and nipples. Sore nipples: cause, prevention and treatment. Inflammation of the breast: cause, prevention and

treatment. Sickesses of the mother that forbid nursing. Conditions of the infant that interfere with nursing. Pages 103 to 121.

CHAPTER 13.

Mother's mode of life and regularity of habits. What a nursing mother should eat. What a nursing mother should not eat. Pages 122 to 127.

CHAPTER 14.

Normal function of the breast. Insufficient milk-supply: cause, signs and treatment. Excessive milk secretion: cause, signs and treatment. Faulty composition of the milk of the mother: causes and treatment. First nursing of the baby. How often shall the child be nursed? How much nourishment shall the child receive at each meal? How long shall the child nurse? Shall the child have one or both breasts at each feed? Pages 128 to 148.

CHAPTER 15.

Weaning. When to wean. How to wean. With what to wean. Pages 149 to 154.

CHAPTER 16.

Selection of a wet-nurse. Page 155.

CHAPTER 17.

Hand-feeding. Points of distinction between cow's and mother's milk. Requirements of a good milk. Signs of a good milk. Pages 156 to 160.

CHAPTER 18.

How to produce a good milk. The cow must be healthy. The cow must be properly fed. The time elapsed since calving must be right. The cow must be properly housed and cared for. The cow must be treated gently. Pages 161 to 164.

CHAPTER 19.

Milking and care of the milk. Microbes and poisons in spoiled milk. Transmission of infectious diseases in the milk from one person to another. How to avoid diseases that may be transmitted in milk. Milking. Further treatment and storage of the milk. Delivery of the milk. Disinfection of the milk vessels. Pages 165 to 171.

CHAPTER 20.

Care of the milk at home. Addition of chemicals. Sterilization. Disadvantages of sterilization. Pasteurization. Sterilization or pasteurization? Raw or heated milk? Is the milk of one cow or the mixed milk of a herd preferable? Pages 172 to 179.

CHAPTER 21.

How to prepare the milk according to the age of the child. Dilution of the milk for the different ages. Addition of fat. Addition of sugar. How to change the curdling of the milk. Addition of gruels of oatmeal, barley or rice. Addition of lime-water. Addition of Sodium Citrate. Preparation of the baby-food in short outlines. Pages 180 to 187.

CHAPTER 22.

Changes in the composition of the nourishment necessitated by disturbances of digestion. Nourishment too much diluted: signs and treatment. Nourishment too concentrated: signs and treatment. Percentage of fat too high: signs and treatment. Percentage of fat too low: signs and treatment. Percentage of sugar too high: signs and treatment. Percentage of sugar too low: signs and treatment. Pages 188 to 194.

CHAPTER 23.

Number, intervals and quantity of feeds. How to feed the baby. Page 195.

CHAPTER 24.

Selections of nursing bottles and nipples. Collapsing of the nipples: cause and how to avoid it. Cleaning of bottles and nipples. Pages 196 to 203.

CHAPTER 24.

Other substitutes for mother's milk. Goat's milk. Ass's milk. Mare's milk. Condensed milk. Buttermilk. Peptonized milk. Kefir. Kumiss. Whey. Beef juice. Pages 204 to 211.

CHAPTER 26.

Proprietary foods. Pages 212 to 213.

CHAPTER 27.

Feeding after the first year. Additions. Farinaceous foods. Meat and meat soups. Vegetables. Eggs. Fruit. Beverages. Alcoholic drinks. Pages 214 to 216.

PART III—DISTURBANCES OF NUTRITION.

CHAPTER 28.

Delicate infants: causes, prevention, symptoms, treatment. Pages 219 to 222.

CHAPTER 29.

English Disease or Rickets: causes, symptoms, prevention, treatment. Pages 223 to 233.

CHAPTER 30.

Acute Indigestion: causes, symptoms, complications and sequelae, prevention, treatment. Pages 234 to 250.

CHAPTER 31.

Chronic Diarrhea: causes, symptoms, prevention, treatment. Pages 251 to 254.

CHAPTER 32.

Constipation: causes, symptoms, treatment. Pages 255 to 260.

CHAPTER 33.

Colics: causes, prevention, treatment. Pages 261 to 264.



To Our Readers.



The never resting wheel of progress brings continually, in quick succession, new devices, medicines, etc., to the surface. This renders obsolete within a rather short space of time any medical book, however carefully written and up-to-date at the time of its publication. We, therefore, have decided to furnish, free of charge, every year or two, as conditions may demand, a supplement to those mothers who will file with the publishers their exact address and notify them of any change made.

All prescriptions in this book are given in such a form that any druggist can fill them. We, therefore, advise to have them put up at your local drug store, provided the druggist is trustworthy and reliable.

But as many of our readers live on farms far away from the nearest drug store but within easy reach of postoffice communications; and as many of the prescriptions call for drugs of the very latest invention, which are kept in but a few stores and cannot be procured from the wholesaler but with a great loss of time, or are likely to be substituted on account of their high price, we have arranged with the F. H. Rheno Co. of Superior, Wis., to furnish the remedy desired, either by Mail or Express, as the case may demand. This, we believe, increases greatly the value of this book, as it insures prompt delivery, proper composition, pure and highly efficient drugs and lowest possible prices.

THE AUTHOR.

PART I.

 Care of the Infant. 

CHAPTER I.

FIRST BATH.

As soon as the child is born and the navel-string cut, the new-born must be taken away from the bed of the mother and wrapped in flannels, which have been warmed beforehand. There it should remain until the water for the bath is prepared, when the cleaning may proceed.

The temperature of the water should be between ninety-eight and one hundred degrees Fahrenheit, that is, about as warm as the blood of the mother. It must be measured with a bath thermometer, such as is shown in Figure 1, which can be bought at any drug store. It is not advisable to measure the temper-



Figure 1. Bath Thermometer.

ature with the finger or the elbow. Though often done, this is dangerous, since a mistake in the temperature of the water may cause serious consequences.

The white, cheesy, smeary substance, which covers more or less the different portions of the body of the child, is very difficult to remove. To do this more easily, it is advisable to clean first the places which are lined thickest with a cloth dipped in oil or vaseline and then proceed with the washing.

The soap to be used for the bath must be mild, that it will cause no undue irritation of the tender skin. A good grade of castile soap answers the purpose. For wiping, use a soft sponge or flannel cloth; either will do. Still better, is a thick pad of absorbent cotton. Special care, however, must be

taken to see that these utensils are used for the baby alone. They should never come in contact with the mother. The use of the same bath cloths and towels for both mother and child may result in carrying disease germs from the former to the latter and entail serious consequences. These can and must be avoided.

The new-born, just after leaving the warm body of the mother, is very sensitive to low grades of temperature. Even a slight cooling off is harmful. For this reason the first bath should be given near a warm stove, on the lap of the nurse. The baby should not be placed into the water. For this there are two good reasons, that is, to avoid:

First, the contact of the navel-stump.

Second, the contact of the eyes with the bath water.

Why these contacts are to be avoided, we shall see in the following pages.

After the bath is finished and the skin gently but thoroughly dried, the child is wrapped in cloths, prepared and well warmed beforehand. Then it is laid in its little cradle and warmly covered. It should not be placed in the bed of the mother, except for a short visit .

CHAPTER II.

CARE OF THE REST OF THE NAVEL-STRING.

The rest of the navel-string, remaining on the child after it has been severed from the mother, soon mortifies. It is a dead tissue and adheres until Nature has closed the large blood vessels which are contained in the navel-string. Then it falls off. This generally takes place within a space of from five to eight days, sometimes as early as the fourth day, quite often as late as the ninth or tenth day. The remaining wound heals in a few days.

In order to avoid the serious consequences described in the chapter on the inflammation of the navel, the greatest care should be taken in treating the stump.

Above all, it must not be allowed to come in contact with the bath water. This contains millions upon millions of dangerous germs which come principally from the secretions of the mother, adhering to the body of the child, and threaten to infect the fresh, open wound of the navel.

Furthermore, all dampness and moisture must be kept scrupulously away from the stump, since moisture promotes, while dryness prevents, the growth of microbes. The sooner it is dry, therefore, the less is there danger of disease. For this reason all salves, oils and fats, still used to-day by some imprudent and irrational persons, are strictly forbidden. Such substances do not allow the moisture to evaporate and hinder that which we most desire, namely, the drying up of the stump.

Proceed, therefore, as follows: Immediately after the navel-string has been cut, wrap the remaining end in a piece of sterilized gauze. If this is not obtainable, take a piece of linen, if it is newly washed and abso-

lutely clean. Allow this wrapping to remain until the child is cleaned. When this is done replace it by a fresh one, turn the stump upward towards the breast and a little to the left side, cover it with an additional pad of dry, clean cotton and apply bandage.

If the navel has been treated with the necessary care and cleanliness and the bandage been protected against wetting and soiling at the time of the daily bath, this second dressing will remain dry and need not be changed until it falls off with the stump. But the bandage must be watched carefully. If moisture appears thereon, the dressing has to be taken off immediately and replaced by a fresh one. The change is made in the following manner: Remove gently of the bandage all that comes off easily. Soak the rest, which generally sticks tightly to the enclosed cord, with freshly boiled water until it is loose. Then remove it. While doing this avoid carefully all pulling and tugging, since a dangerous bleeding may be the consequence. If the old material has been removed, disinfect with a solution of Boric Acid (Prescription 1) or better Rhenolin (Prescription 2), dry gently and apply fresh gauze and cotton. Then close with the navel-bandage.

Prescription 1.

Boric Acid 3 ounces

Prepare the solution of Boric Acid in the following manner: Boil two teaspoonfuls of the white powder with a pint of pure, soft water in a clean, enameled vessel for several minutes, remove from the stove and use the solution lukewarm. It is not necessary to use the entire pint at every dressing. Take what is sufficient for cleaning and preserve the rest in a clean, white, well-corked bottle. If used again, the solution must be warmed by placing the bottle in a vessel of warm water.

Stronger as an antiseptic, more reliable in its

work and easier to prepare is a solution of Rhenolin (Prescription 2) and should, therefore, be preferred.

Prescription 2.

Rhenolin 4 ounces
One-half teaspoonful to a pint of boiled water.
The warmer the solution, the better the effect.

After the stump is detached, all that is required further is to keep the little wound in a clean condition by washing it with freshly boiled water and covering it with sterilized gauze or clean, dry linen once a day.

If the secretion is profuse, it is best to powder the wound, after being cleaned (preferably with Rhenolin) and dried thoroughly, with a mixture of Salicylic Acid, Bismuth Subnitrate and Purified Talc (Prescription 3), or a twenty per cent mixture of Zinc Peroxide (Prescription 4), and proceed as before.

Prescription 3.

Salicylic Acid18 grains
Bismuth Subnitrate.....1½ drachms.
Purified Talc 2-3 ounce

Prescription 4.

Zinc Peroxide1½ drachms
Purified Talc6 drachms

In this instance the dressing should be renewed oftener, that is, once or twice a day, according to the amount of the discharge. Sterilized gauze and absorbent cotton can be obtained at any drug store.

If the little wound, in spite of this treatment, does not heal; if it continues to secrete and shows no tendency to close, the following salve (Prescription 5)

Prescription 5.

Silver Nitrate2½ grains
Balsam of Peru¾ drachm
Hydrous Wool-Fat, Petrolatum, each ½ ounce

will be found effective. It is spread thickly on gauze or linen and applied twice a day after the sore has been cleaned thoroughly but gently with a solution of Rhenolin.

Sometimes a lump of so-called "proud flesh," which bleeds very easily upon being touched, forms on the wound. If this lump be small, the same salve will, in most instances, suffice. But if it be large, it must be destroyed with the caustic pencil (Prescription 6), whereupon the sore will quickly heal under the application of the above given medicines, either salve or powders.

Prescription 6.
One Caustic Pencil.

The pencil, when bought, is generally covered with wax and of a light gray color, but darkens gradually upon exposure to air and light until it becomes black. This change does not interfere with its efficiency, because it is only the outer layer which discolors, the inner parts remaining the same. The proud flesh turns white when it is touched with this stick. There is hardly any pain connected with this procedure and no harm can be done, if the healthy flesh is carefully avoided.

Gauze, linen, and cotton can be discarded as soon as the navel is healed and perfectly dry. The use of the navel-bandage, however, should be continued for two or three months more. This is done to prevent a rupture of the navel. The recently healed wound is still soft and yielding and cannot as yet withstand a strong pressure from within, such as is brought to bear upon it when the child presses, cries, coughs, vomits, etc. Under these circumstances, the navel bandage is a valuable protection and support. It can be dispensed with as soon as the scar becomes strong and firm. This may safely be assumed to be the case after the fourth month of life.

INFLAMMATION OF THE NAVEL.

Like any other dead tissue so also the rest of the navel-string is apt to rot and to decompose, if it is

not properly treated and disease germs are allowed to settle on it. The consequences are serious. The navel inflames, the stump discolors and begins to smell. If the latter is already detached, when infection develops, the remaining open sore begins to send forth a thin and acrid fluid. The corrosive secretions irritate the surrounding skin. It becomes red and inflames and soon is changed to an angry looking, painful sore, if nothing is done at the very beginning to prevent it. The consequences are still worse, if the disease germs find opportunity to penetrate from the outer surface into the circulating blood. A more or less progressive blood poison follows. The child loses its appetite, becomes feverish, restless, it frets and cries much, the movements of the bowels, normal in the beginning, soon become irregular and bad smelling, the strength decays and the general condition grows worse as time goes on.

The situation is dangerous. Many a child has lost its life under such circumstances. If life is spared, a weakness often remains for months or years to come.

Prevention—No evil events need be feared during the time the navel is healing, if the directions given in the former chapter are faithfully carried out.

Treatment—Whenever possible a physician should be called in all more serious cases. If this is beyond reach and the mother must undertake the treatment, she should be conscious that the responsibility is great and that the life of the child depends on the carefulness with which she performs her duty.

The handling of the sore is similar to the handling of the normal navel-wound. All that we have said on former pages is true here also, especially as to the removal of the old bandage. Emphasis must be laid upon scrupulous cleanliness. Everything that comes in contact with the wound or the dressing must be carefully prepared. The scissors, with which

the gauze and the bandage is cut, should be boiled for ten to fifteen minutes and the hands be thoroughly washed with hot water and soap, before anything else is done. Then the old dressing is taken away, the sore washed with Rhenolin, dried, etc. (see page 4).

As a dusting powder upon the sore itself a very thin layer of Iodoform (Prescription 7), or of the next powder (Prescription 8), is recommendable, while the irritated skin of the surrounding is covered with a powder which is made of Zinc Oxide and Purified Talc (Prescription 9), or, if it is very much inflamed, is dusted with the same powder as given in Prescription 8.

Prescription 7.

Iodoform1 drachm

Prescription 8.

Zinc Peroxide2 drachms

Purified Talc6 drachms

Prescription 9.

Zinc Oxide2 drachms

Purified Talc6 drachms

If the attendant notices that under the dressing, thus applied, the secretions accumulate and form crusts, which retain the discharges, it becomes necessary to keep the gauze in a wet condition. To this end it must be dipped into the cleaning solution—either Boric Acid, or better Rhenolin—wrung out tightly, laid upon the wound and covered with a piece of oil-silk or oil-cloth, overlapping the gauze sufficiently, that is, two or three fingers broad, to prevent the latter from drying out. Through this precaution the absorption of the secretion into the dressing is promoted, the evaporation of the anti-septic solution prevented, the gauze kept moist, the formation of noxious crusts obviated and the sticking of the dressing rendered impossible. It is necessary, however, to state that some cases will progress more favorably under the dry than under the wet dressing. If this is observed, the former must be returned to.

If the inflammation has subsided, but the healing of the wound is delayed, the application of the ointment given in Prescription 5 is often of decided advantage.

The healing will require from a few days to several weeks, according to the severity of the case.

BLEEDING OF THE NAVEL.

Bleeding of the navel may occur either before or after the navel-string has been detached. If before, it must be tied anew; if after, or if the new tying does not suffice and the bleeding is not too profuse, the attendant may try a remedy which is at hand in nearly every household. This is gelatine. It is kept in almost every kitchen for the preparation of puddings. A great many different kinds are on the market, partly colored, partly uncolored, partly with, partly without the addition of citric acid, phosphates, etc. Of these the pure, uncolored, and unmixed gelatine should have the preference. Any other, however, may be used in case of emergency.

This gelatine is to be prepared in the following manner: Place one-half or one teaspoonful into a small, clean enameled vessel and add so much water that there remains after one-half hour's boiling a slightly thickish, viscid fluid. If the solution gets too thick and tenacious, dilute with boiling water out of the steaming tea kettle.

With the gelatine, thus prepared, saturate a piece of sterilized gauze or clean linen and apply it directly to the bleeding surface. If the bleeding stops, allow this cloth to remain until the next day, when the ordinary dressing may be employed again.

One precaution, however, must be emphasized. The gelatine sometimes contains disease germs which, when coming in contact with an open sore, are apt to produce the dreaded lockjaw. In order to avoid this danger, the above directions must be

scrupulously followed and the gelatine be cooked well for at least one-half hour. This will kill the germs, should they be present, and render them harmless.

Gelatine tends to arrest a bleeding on any part of the body also when taken by mouth and absorbed into the blood. The bleeding baby should, therefore, have some of it to drink. To prepare it for this purpose a teaspoonful of the substance is boiled with four to six ounces of water until the fluid is reduced to half of this quantity. When cooled it is ready to be fed either clear or mixed with water or milk or sweetened with sugar. One teaspoonful from time to time is the proper dose. The more it bleeds, the more should be given. In severe cases, it is advisable to administer half of the solution, which has been prepared, at once. Gelatine is no poison; it is a nourishment. It cannot injure, if care is taken that the movement of the bowels is not retarded or checked. If this should happen, an injection with lukewarm soap water (see chapter on "Constipation") will speedily remedy the trouble.

If, in spite of all these efforts, the bleeding does not cease, or if it is very severe from the beginning, it is best to call a physician. If this cannot be done, the mother may employ one of the following remedies:

The simplest and best is a solution of Adrenalin.

Prescription 10.

Solution Adrenalin Chloride (1:1000) $\frac{1}{2}$ drachm.

This can be had at any drug store. A small piece of absorbent cotton or clean linen, just big enough to cover the blood exuding surface, should be saturated with a few drops of this solution and pressed gently upon the bleeding place. The effect is nearly always immediate, that is, the bleeding stops. The drug is not corrosive but, if taken internally, is a severe poison. It should, therefore, be handled with great caution.

Physicians use frequently powerful caustics with which to stop the oozing blood. If this be done, care must be taken that only the bleeding surface and not the surrounding skin is cauterized, or the wound will be enlarged unnecessarily.

To these drugs belong the Tincture of Ferric Chloride (Prescription 11) and the caustic pencil (Prescription 6, page 8).

Prescription 11.

Tincture of Ferric Chloride1-3 ounce

The former is to be applied with a camel's hair brush or with a small pad of absorbent cotton, wound around the end of a match or a toothpick. The latter will burn the surface and will turn the tissue into a crust, which obstructs the bleeding vessels.

DISCHARGES FROM THE NAVEL.

When the navel-wound is healed, the resulting scar begins to contract and the navel sinks below the surface, forming, under ordinary circumstances, a small pit. Rarely the navel remains prominent. With some children, especially with those who have an extra amount of fat, the ordinarily superficial pit becomes a deep recess. In such instances it may happen that the secretions of the skin are retained at the bottom of this recess. They gradually decompose and by their irritating qualities cause the parts to inflame and to send forth an acrid and pungent secretion. The navel reddens, gets sore and tender and the surrounding skin becomes affected. The condition is not dangerous, but always indicates a certain degree of neglect, since such secretions never develop if at every bath the navel has been cleaned down to the bottom.

Prevention—As every other part of the body, so also the navel should be cleaned in all its nooks and nicks at every bath. If it is deeply retracted and the bottom of the recess cannot be

reached with the finger, a pad of absorbent cotton, wound around the end of a match or toothpick, is to be employed for cleaning. If this be done, abnormal secretions will never develop.

Treatment—A discharging or red and inflamed navel must be cleaned twice a day thoroughly with a solution of Boric Acid, prepared as described on page 6. After drying, a small pad of cotton should be inserted and left in the pit intended to absorb the secretions, as they form, and to lead them to the surface. If this is done and the pad renewed as soon as damp, a few days will suffice to effect a cure.

RUPTURE (HERNIA) OF THE NAVEL.

We will take up in this treatise this disorder also, since its prevention is closely connected with the care

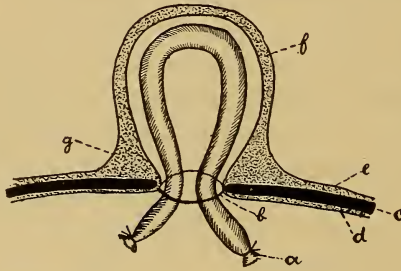


Figure 2. (a) bowels. (b) mouth of rupture. (c) muscular layer of the abdominal walls. (d) inner membrane, covering the abdominal organs. (e) outer skin. (f) sack of the rupture, consisting of outer skin, inner membrane and connective tissue. (g) neck of the rupture.

of the baby and should be known to every mother.

We learned on page 8 that the newly formed and soft scar is, directly after the closure of the wound, still very yielding and unable to withstand any lasting or violent pressure from within. Precautions were suggested. But in spite of their observation a mother should ever be on the alert against this evil and not overlook or neglect its early beginning, since the sooner it is recognized and treated the better for the baby.

Detection is easy. If a rupture develops, a slight bulging can at times be noticed in the region of the navel. Upon examination it is easy to find at this place a round opening, leading into the abdominal cavity. This is small at first, receiving but the tip of the little finger, becomes, however, larger in later stages, allowing sometimes even the thumb to pass.

As said, this opening leads directly into the abdominal cavity and is called the mouth of the rupture (Fig. 2 b). Through this mouth the contents of the abdomen protrude under the skin, forming the bulging, and retreat again to their normal position with a gentle gurgling as soon as the pressure is relieved. By the repetition of this incident of protrusion the mouth gradually widens, more and more intestines slip into the sack and the rupture enlarges.

Causes—A tendency to rupture is sometimes inherited. This is demonstrated by the fact that there are families in which every child is affected by the malady. Far oftener, however, it is not an inherited predisposition, but an unnatural increase of the pressure in the abdomen that leads to the rupture. This increase of pressure may be brought about by different causes. In some instances it is due to the extension of the bowels by gases. Faulty nutrition and especially too early feeding of flour and foods prepared from unconverted starch (see chapter on “Proprietary Foods”) cause the abdomen to swell, in aggravated cases to such an extent that the abdominal walls look and feel like a drum-skin. In other instances the pressure is not lasting, but very violent and in jerks instead; so in persistent and continuous crying, dry, irritating, and hacking coughs, recurrent vomiting and strenuous pressing on account of constipation or difficult urination, etc.

Prevention—All the causes, above enumer-

ated, must be avoided or be removed, if they are present. How this is done, must be gleaned from the respective chapters of this book. It will suffice to have attention drawn to them.

Treatment—We are happy in being able to give to those mothers whose children are afflicted with ruptures of the navel the consoling assurance that the malady, if properly treated, nearly always heals voluntarily. Only in rare instances is an operation required. It takes, of course, considerable time with larger ruptures. But no mother should despair and continue the treatment cheerfully. Success will crown the efforts.

The first requisite for a cure is the removal of the cause, that is, the accumulation of gases must be relieved by proper nourishment (see “Feeding of Children”), the reason for the crying (see “Crying of Children”) be discovered and set aside, the irritating cough be allayed, the bowels be regulated and the discharge of urine be rendered easy.

The cause being removed, further treatment is simple. Above all, it is necessary to keep the contents of the rupture within the abdominal cavity. To this end proceed as follows: Reduce what is out, apply a pad of clean absorbent cotton over the opening and lift from each side a fold of the skin over the cotton so that they meet in the middle line. In this position fasten with strips of adhesive plaster, which, in order to accomplish their purpose, must reach around the body to the spinal column. Either two strips cross-wise, or three to four strips overlapping like the shingles on a roof, or one strip around the body and crossing in the front, as seen in Fig. 3, can be used, depending upon the size of the rupture. If it be small, one single strip about one and one-half inches wide will generally suffice. If it be larger, two strips crosswise are preferable, and, if it be very large, the overlapping strips are best employed.

Adhesive plaster, as commonly used, is apt to irritate the skin to which it is attached. Oxide of Zinc plaster is, therefore, preferable. This has proved reliable and effective in the author's hands. Its sticking and non-irritating qualities can always be relied upon. A bandage made with this material need not be removed until the strips begin to loosen.

If, however, for some reason an irritation of the skin develops, the bandage must be removed and should not be re-applied until the skin returns to

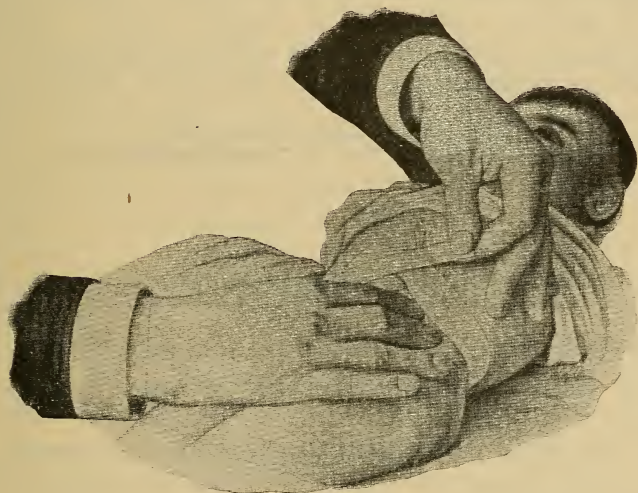


Figure 3. Application of Adhesive Plaster, according to Trumpp.

normal. If it seems inadvisable to wait that long, care ought to be taken that all the secretions, arising from the irritated surface, are freely drained and frequently removed.

The treatment just given is the best, cheapest and most effective for all ordinary cases. It not only retains the rupture, but also diminishes the tension of the abdominal walls, a benefit, which is of the utmost curative importance.

However, the application of this kind of bandage

is somewhat difficult and many a mother finds it more convenient and easier to treat the rupture in the old-fashioned way, using the strips of adhesive plaster and a button. This manner is also good and effective. The procedure is as follows: Reduce the contents of the sack, close the opening with a flat, cotton-covered button or any other fitting object, as, for instance, a properly cut cork or piece of wood, and fasten with strips of adhesive plaster in the same manner as shown before. In using this kind of bandage one should take care that the object applied is flat and so large that it cannot project into the opening and press the edges apart (Fig. 4). If this should be allowed to happen, the button will increase,



Figure 4. (a) button as it should be. (b) button as it should not be.

rather than diminish, the size of the rupture and make a cure impossible.

This point has also to be taken into consideration when purchasing a ready-made truss or bandage. But too often instruments are offered to the public which are faulty in construction and wholly unfit for use.

CHAPTER III.

CARE OF THE EYES OF THE NEW-BORN.

While after birth the body of the child is to be cleaned with soap and water, it is advisable to wipe the eyelids only with dry, clean cotton or linen. Under no circumstances should the water of the bath be allowed to come in contact with those delicate organs.

To follow this advice is of the utmost importance, if one wants to guard the eyes of the child against serious consequences. On page 5 we have learned that millions upon millions of microbes are washed from the body of the baby and mix with the water. Some of them are harmless, but others are very dangerous and may, if inoculated into the eye, give rise to a most serious inflammation, yes, may lead to blindness.

Similar precautions as advised for the first should be taken during subsequent baths. Never let the eyes be washed with the same water which has been used for the body. A separate dish with clean absorbent cotton and freshly boiled water is required for the care of the eyes and ought always to be placed ready for use before the bath is commenced.

INFLAMMATIONS OF THE EYES OF THE NEW-BORN.

We will here treat also more fully of those diseases of the eyes of the new-born which may follow as a consequence of want of proper instruction or indifference in the care of the child. We do this for the same reason which prompted us to describe the diseases of the navel, namely, because they are easy to prevent, if the mother's or nurse's attention has been called to them. Should

they, however, develop, in spite of careful nursing, a well instructed attendant will know from the beginning where she is. She will do what is proper at once and not wait until the eye is lost and the child crippled forever. No greater sin, yes, crime, can be committed against the innocent nursling than to allow the time of salvation to pass in idle expectation of spontaneous improvement. Hundreds, yes thousands and hundreds of thousands, of cases of blindness and impaired vision, infinite calamity and misery, can and will be averted, if it be possible to educate the broad masses of the people as to the vast importance of an intelligent prevention and an early proper treatment of all inflammations arising in the eyes of the new-born.

In order to demonstrate the seriousness of this scourge, it will not be amiss to digress from our topic and cast a quick glance over the future life of those unfortunate children who fall victims to this disease because their parents and attendants neglected the proper precautions or early treatment, by reason of want of enlightenment or of indifference and carelessness.

We take from statistics that from 30,000 blind people in Germany about 10,000, and from 50,000 in the United States, about 15,000 have to blame the loss of their precious eye-sight to the specific inflammation of the eyes of the new-born. These appalling figures cannot fail to touch the heart of thinking people, if they but dissect the terrible, little word "blind" and its consequences. We are aware, indeed, that only those persons can comprehend its full meaning who have had the opportunity of seeing the pitiful and heart-rending sights afforded in institutions devoted to the education of the "eyeless" children or of observing the terrible burden imposed upon a family by a blind member. And yet those figures are far from expressing the real extent of the misery wrought by

this horrible and odious malady. Not every child taken ill becomes blind. In most instances, in which evil consequences remain, the vision of but one eye is diminished or lost. The multitude of those unfortunates who are more or less restricted in their capacity of earning a livelihood and who are set back in their competition with their fellow-men, dragging out a miserable existence, because of their "weak eyes," are not included in this enumeration. If it were possible to ascertain their numbers, we think that 100,000 or even 200,000 would not reach the mark for the United States alone.

May these terrible truths stimulate every mother to the utmost precaution. The welfare not only of the child, but also of the whole family, may depend on the heeding of these warnings.

SIMPLE CATARRH OF THE EYES.

Not every inflammation, arising in the eyes of the new-born, is as dangerous as the one just hinted at. This is because a number of them are not brought about by the gonococcus, the producer of the specific inflammation of the eyes (see next chapter), but by less harmful microbes or by other irritants, such as too bright light, mechanical insults, etc., which also may sometimes cause the eyes of the new-born to inflame.

Prevention—The non-specific inflammation of the eyes of the new-born can be prevented by following the directions given in the different chapters of this book as to the care of the eyes, that is, the protection of the eyes against too bright light in the first few days after birth, the prevention of the contact of the bath water with eyes, especially at the first bathing, and the employment of clean utensils, such as sponges, wiping cloths, etc.

Symptoms—The symptoms of the non-specific inflammation of the eyes are, in the beginning,

similar to those of the specific. They are, however, rarely so violent. The eyes redden, the eyelids swell. A secretion, more or less purulent in character, comes forth; it dries up and forms crusts in the outer and inner corners. The eyelids stick together, especially in the morning, so that it is sometimes difficult, if not impossible, for the baby to open them. Beyond that the inflammation seldom proceeds. Those dangerous conditions which threaten the eyesight with destruction, as described in the following chapter, are possible in very much neglected cases, but are extremely rare.

After one or two weeks the discharges begin to lessen; the irritation and swelling subside, and the redness disappears. Soon the conditions are normal and the baby opens the eyes again with the same brightness as it did before the trouble began.

Treatment—Since it is difficult for the mother to decide if the inflammation in the eyes of her darling is a simple catarrh or of specific nature, it is best to call the physician in all aggravated cases. Light cases may be treated by the mother herself. Rinsing the eyes with a solution of Boric Acid (see page 6) or with a solution of Potassium Permanganate (Prescription 16), as given in the following chapter, will prove to be sufficient. The rinsing should be repeated as often as matter accumulates—every hour, if necessary. Three or four treatments a day, however, will generally suffice. The mode of rinsing is the same as that described in the following chapter.

If the inflammation has subsided and there remains a kind of chronic irritation with slight redness and slimy secretion, as may happen, the following medicine (Prescription 12) should be used. One

Prescription 12.

Zinc Sulphate $\frac{1}{2}$ grain
Cocaine Hydrochloride $1\frac{1}{2}$ grains
Solution of Boric Acid (3 per cent.)...1-3 ounce

drop of this solution, instilled into the eyes of the baby three or four times a day, will speedily remove the last vestige of the disease.

SPECIFIC INFLAMMATION OF THE EYES OF THE NEW-BORN.

The specific inflammation of the eyes of the new-born is that dreadful disease to which our description on page 20 refers.

The view commonly held by the laity that this disease is brought about by too bright light, catching cold, etc. is absolutely false. Specific disease germs, known as "gonococci," are the cause, and the only cause. These germs are definite little beings, so small that they can only be seen under a powerful microscope. Figure 5 shows their picture. Two are al-

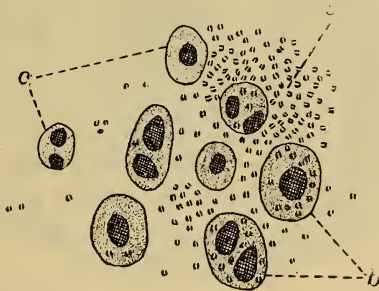


Figure 5. (a) gonococci free in the secretion. (b) pus cells including gonococci. (c) pus cells without gonococci.

ways lying together and they look like coffee-beans.

In many instances, in which the mother in her former life has been infected with these germs, they are contained in the discharges coming from the vagina and enter the eyes of the child, either,

First, during the time of the passage of its head through the vagina, if it happens to separate its eyelids at that period,

Second, during the time of the first bath, if the microbes are wiped directly into the eye with the wiping cloth or are inoculated with the bath water (see page 5), or,

Third, during the time of one of the subsequent baths, if the fingers, linen, sponges, cloths or other utensils used were soiled with the discharges of the mother. This mode of transmission is found most frequently in families in which the bath utensils are used for both mother and child, as it may happen if the care of the house is left to some ignorant and imprudent person.

These three different modes of transmission have been enumerated because they have to be separated while treating of prevention.

Prevention—After learning how and at what time the specific microbes may enter the eyes of the new-born, it is easy to understand what should be done to prevent the infection.

In order to keep the disease germs from entering the eyes of the new-born, while its head is passing the mother's genitals, it is necessary to thoroughly disinfect, shortly before the birth begins, the vagina of every mother who can be "suspected" of harboring the germs. This is done by injections. The best remedy to be used is Rhenolin in the strength of two teaspoonfuls to a quart of water, or a solution of Cor-

Prescription 13.

Rhenolin 4 ounces

rosive Mercuric Chloride in the strength of 1 to 4000. This latter is prepared by dissolving one of the following tablets (Prescription 14) in two quarts of

Prescription 14:

Corrosive Mercuric Chloride 7 1-3 grains
Sodium Chloride 2-3 grain

water. The injection is made as follows: Prepare two or three quarts of the solution with warm water; hang up the syringe (Fig. 6) one to one and one-half feet higher than the hips of the mother; place a bed pan or other vessel under her; disinfect her outer parts thoroughly with the same solution; insert the

freshly boiled endpiece of the syringe (Fig. 6 d.) into the vagina and allow the solution to flow out slowly until the bag is empty. Then the cleansing is finished.

“Suspected” should be every mother whose former children have passed through the same disease or who either during the time of her confinement suffers from a sharp, corrosive, and acrid discharge or sometime in her former life has suffered from suddenly appearing, disagreeable “whites,” which made thick, greenish-yellow spots in the underwear, and were associated with painful urination. It does not matter how long the discharge has ceased. For years

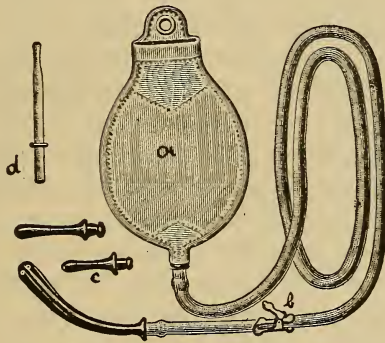


Figure 6. Fountain Syringe. (a) rubber bag. (b) stop cock. (c) end piece for rectum. (d) end piece for vagina, made of glass.

and years these microbes remain virulent, lurking in the folds of the generative organs for an opportunity to resume their harmful work. It does not matter to which class of society the mother belongs. Neither the house of the poor nor that of the rich is free from this pernicious microbe. The innocent and educated woman has equal chance to be infected with the morally defective and uneducated, for, in the overwhelming majority of cases, it is not the wife but the husband who has to shoulder the blame. He, as a rule, brings home the germs; wife and children do the suffering.

As a further precaution, it is advisable, in such "suspected" cases, to drop, after the first bath, one drop of the following solution (Prescription 15) into each eye of the baby. This remedy kills the specific germs, should some, in spite of all precaution, have been inoculated.

Prescription 15.

Silver Nitrate	3 grains
Distilled Water	1-3 ounce

The process is called "Crede's process," after its inventor, Crede, a German physician. It has proved to be a blessing to humanity. Thousands, yes, hundreds of thousands of children have thus been saved from visual disability and blindness. It is in use in nearly all of the European clinics; that is, as a matter of routine precaution, a drop of this solution is instilled into the eye of every child which is born in these institutions. The beneficial results are unmistakable. The number of children, blind from this cause, has decreased enormously.

The instillation of the solution is not always easy to perform. It requires the help of a second person. This latter must instill the drop, while the first attendant separates the eyelids in exactly the same manner as described later on. It does not matter if two drops should happen to fall into the eye, for the excess will flow out immediately.

In some instances a slight irritation follows the instillation. This is of no consequence. If the eye is kept clean, it will disappear rapidly.

In order to avoid the infection of the eyes during the first bath, it is necessary to follow strictly the directions given in a former place (see page 19). The only difference is that in "suspected" cases the lids, after being cleaned with dry cotton, are wiped once more with cotton dipped into the solution given in Prescription 17.

It is still easier to avoid the infection of the

eyes in subsequent baths. If the bath utensils are not used but for the child alone; if an extra dish with clean cotton and freshly boiled water is always prepared for the eyes separately; if the hands of the attendant are always well washed and cleaned before the bath begins no accident will happen.

Symptoms—One to four days after birth the eyes of the nursling begin to redden. The upper lids swell; secretion begins. This is watery in the beginning and scanty. Soon, however, it becomes profuse and mattery. The swelling of the lids increases, their movement becomes difficult and finally impossible, so that the eyes can no longer be opened voluntarily. The difficulty is increased by a spasm of the eyelids, which closes them so tightly that the escape of the discharge is rendered impossible, in spite of the continued accumulation. High pressure develops within. If at this stage the eyelids are opened by force, the matter comes out in a jet. The inner membranes are in a condition of the highest inflammation; they are dark red, swollen, puffy, rough and often sprinkled with small, dark spots of blood.

If the inflammation has advanced so far and the proper treatment has not as yet begun, the cornea, that clear, transparent, crystal-like membrane in the front part of the eyeball, soon begins to become cloudy. It will then look like opaque glass. Sooner or later one or more yellow spots appear thereon. They develop into small abscesses, which in most instances, break to the surface and form ulcerations.

Now the eye is lost. Rarely, if ever, the contents of the eyeball flow out through the perforating ulcer. But the healing abscess leaves a scar which makes the cornea cloudy and sight dim or impossible, so that vision is spoiled, never to be repaired.

Treatment—This dangerous disease should never be treated by the mother herself, if the services of a good and reliable physician can be obtained. But

another, we will proceed to describe the treatment which is best to be employed.

But first let us utter a word of warning. The matter which comes from the eyes of the infant is extremely poisonous. Should it happen that the smallest quantity of it, say one-tenth or one-twentieth of a drop, gets into the eye of the attendant, it will there produce an inflammation of the same, or even greater severity, than exists at the place it comes from. Therefore, precaution! The attendant should never hold her head close to the nursling while caring for its eye, but always keep it at such a distance that it cannot be reached by the matter, should this spurt out in a jet. Furthermore, she should wash her hands carefully with soap and hot water after every treatment and never touch any object around the room until this is done.

To begin the treatment, it is necessary, first of all, to remove thoroughly the matter enclosed in the eye. This is best done by rinsing the cavity in front of the eyeball. The process is thus:

The mother or nurse takes the child on her lap, turning it a little upon that side on which the eye to be washed is located, that is, upon the right side, if the right eye, upon the left side, if the left eye is to be cleaned. Why this is done will appear later. Then she proceeds to open the tightly closed eyelids, a task difficult to perform and requiring patience and perseverance. To this end she places the thumb of the one hand upon the one, and the second or middle finger of the other hand upon the other eyelid in such a manner that the tips of the fingers meet, that is, that they lie as near as possible to the edge of the lid. Now she pulls apart, carefully watching that no pressure is exerted upon the eyeball. This would be dangerous. If the fingers or the skin of the lids are wet and slippery, the attempt will fail. For this reason it is necessary to dry both fingers and skin

since this is not always within reach for one reason or thoroughly with absorbent cotton before the work begins.

As soon as the eyelids are opened the matter comes forth. The rinsing should now begin. The helper takes the solution and pours it slowly upon the space between the nose and the inner corner of the eye, or directly into this corner. It is forbidden to direct the fluid into the middle of the eye, since evil consequences may follow.

Instead of pouring the solution out of a vessel, it is also allowable to press it out of a pad of absorbent cotton, which has previously been dipped into the medicine. Either way will answer the purpose.

If, as recommended, the child is not placed flat on its back, but turned slightly upon the side on which the eye to be cleaned is located, the medicine will flow through the whole of the eye. It enters at the inner and leaves at the outer corner, taking along all the matter contained in the cavity. After some experience has been gained, it is advisable to close and open the eyelids a few times, while the solution is flowing. The expulsion of the matter is thereby facilitated. But where experience is lacking this is rather to be omitted.

Extraordinary precaution must be taken if only one eye is attacked by the disease. This happens rarely, but it does. The position on the side, while rinsing, is under such circumstances of still greater importance. Only thus is it possible to avoid the infection of the healthy eye by the matter, which otherwise could run, by misfortune, across the nose during the process of cleaning. It is a task difficult to perform, especially with restless and resisting children, but it must be accomplished.

The same calamity, that is, the escape of discharge from the sick into the healthy eye, may also occur during sleep, if by gravitation the poisonous secre-

tions are forced to take their way in this direction. To avoid this misfortune, the child has to be put to sleep in its cradle in the same position in which the rinsing is done, that is, upon the same side on which the diseased eye is located.

As a further precaution against infection from the other side, the healthy eye should be closed with a bandage. This is done by placing upon it a thick pad of clean, absorbent cotton and fastening it with a cloth without exerting any pressure. The only difficulty arising lies in getting a good closure next to the nose. The cotton is to be removed three to four times a day in order to inspect closely the underlying eye and to allow its natural secretions to escape. It is only in this way that an unpleasant surprise can be avoided.

According to the severity of the inflammation and the quantity of the secretion, the eye should be rinsed every two or one or one-half or even one-quarter of an hour, if necessary. The rule applies to rinse whenever matter has accumulated. If the child is sleeping, it should not be disturbed, if it does not sleep too long.

In severe cases it is advisable to apply ice compresses to the lids between the rinsings, if ulcerations do not exist on the cornea. Ice compresses are made by laying upon the inflamed eyes small pieces of linen, folded several times, which have been dipped in ice water, or which were kept on a block of ice. If renewed every one or two minutes, that is, as soon as they begin to get warm, they ease the inflammation, reduce the fever and promote the healing.

If the cornea is cloudy and ulcerations have developed, the cold compresses are not well borne and warm ones must be substituted. This is done by applying the rags after being dipped in a hot fluid. The same solution of Boric Acid as used for rinsing

or a hot chamomile tea are best suited for this purpose.

It is very difficult, if not impossible, for an inexperienced mother to treat, or to recognize, such sad complications as the participation of the cornea in the inflammation. Therefore, let us urge once more upon the parents to obtain the services of a skilled physician in all such cases whenever possible. But skilled and experienced he must be. Not every physician is qualified to properly handle such cases. But if the latter by his skillful work has saved the child from disability and blindness, he deserves his pay. It is much, very much cheaper to pay the bill of a successful physician, yes, to travel for dozens or hundreds of miles, than to be forced to raise a child that in consequence of its impaired or lost vision will be a burden to the family so long as it lives.

As rinsing fluid, either the solution of Boric Acid, described on page 6, or a solution of Potassium Permanganate, eight grains to a pint of freshly boiled

PRESCRIPTION 16.

Tablets of Potassium Permanganate (2 grains) No. 100
Four tablets to a pint of water.

water, may be used. This latter solution is reddish-purple and looks like wine. It is cheap and easily prepared, since the remedy dissolves very readily in water.

If neither medicine is obtainable, as it may happen on the farm, a simple salt solution can be substituted, one teaspoonful of common table salt to a quart of water. Water alone without the salt will irritate the eye and should not be used. This salt solution has also proved to do well. It should, however, not be employed, if one of the two above mentioned remedies can be procured.

All these solutions must be absolutely clean and should be used lukewarm.

The rinsings alone, however, are not sufficient.

Besides these there should be instilled into the eyes, after a thorough cleaning, three times a day one or two drops of the following medicines (Prescriptions 17, 18 and 19).

Prescription 17.

Argentum Colloidale3 grains
Distilled Water1-3 ounce

Prescription 18.

Protargol8 grains
Distilled Water1-3 ounce

Prescription 19.

Argyrol8 grains
Distilled Water1-3 ounce

These medicines are arranged according to their efficiency. The first is far the best, then comes the second and last the third.

If this treatment is faithfully pursued, an eye will hardly ever be lost. One or two weeks are generally sufficient to effect a cure, if the treatment is begun immediately after the appearance of the inflammation.

In some few instances the improvement, though rapid at first, stops at a certain point and will not progress any further. If this should happen, the medicine must be changed and either of the two following solutions should be used (Prescription 20 and Prescription 21). Also of these one drop is instilled three times a day.

Prescription 20.

Zinc Sulphate½ grain
Cocaine Hydrochloride1½ grains
Solution of Boric Acid (3 per cent.)...1-3 ounce

Prescription 21.

Ichthyol3 grains
Distilled Water1-3 ounce

CHAPTER IV.

APPEARANCE OF THE CHILD AFTER BIRTH.

After mother and child are cared for, and their most urgent needs satisfied, the relatives are at leisure to inspect somewhat closer the newly arrived member of the family. Not only for the satisfaction of their own curiosity but also in the interest of the nursling is it necessary that this inspection be made with accuracy and intelligence. Eyes, ears, nose, arms, legs and the different parts of the trunk must be subjected to the scrutiny. Genitals and the exterior opening of the bowels demand the closest inspection, since on these places abnormalities are most frequently met with.

In order to facilitate and render intelligent this inspection, we will more minutely describe the principal things to which attention should be paid.

CHILDREN BORN AT TERM—Their weight is on an average $7\frac{1}{4}$ pounds. Boys are a little heavier than girls. The hair of the head is $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long. Fluffy and downy hair is to be found only on the shoulders, back and upper arms. The forms are full and round. The fingernails are well hardened and over-reach slightly the tips of the fingers. The nails of the toes, however, do not reach the end of the nail-bed. The bones of the head are hard and lie close together. They allow to remain open only those places which we describe as “fontanels” in the later chapter, “Signs of Normal Development of Children.” The muscular movements are vigorous and the voice strong.

CHILDREN BORN TOO EARLY—They are smaller, their weight is less. The forms are not rounded, the skin is thin and flabby. The hair on the head is shorter, but nearly the whole of the body is

covered with a fluffy, downy growth. The fingernails do not over-reach the tips of the fingers. The bones of the head are soft and impressible and the fontanels unusually large. The muscular movements are weak and the voice is feeble.

THE COLOR OF THE SKIN is pale-reddish with a shade of yellow. The changes which the skin undergoes in the next days are described later.

THE LENGTH OF THE BODY is on an average 20 to 21 inches.

THE FORM OF THE HEAD is somewhat abnormal and strange directly after birth. This is caused by a swelling on that part of the skin of the head which comes first. The swelling is the stronger the longer the labors lasted and the more effort it took to develop the head. If the swelling is located on the posterior parts, it makes the head appear abnormally long; if it be located on the anterior parts, it makes the head appear abnormally high. This swelling is caused by a disturbance of the circulation of the blood in those parts and is of no consequence. It should be left alone. It serves no purpose to try to correct this seeming malformation by massaging and bandaging. The swelling will disappear spontaneously in a few hours or days, without leaving any bad effects whatever.

Sometimes it happens that the swelling is caused by a clot of blood under the skin. This also is generally of no consequence. The only difference is that the disappearance of the swelling will be slower, and that it will take four to six weeks instead of a few days to vanish.

NAVEL—All that is necessary to know about the navel has already been said.

THE GENITALS are fully developed with normal children. In the case of a boy the testicles should be both in the scrotum, that is, that pouch which contains them with normal adults. The con-

dition of the foreskin is of importance. It should be easily retractable and should leave an opening large enough for an easy passage of the urine. Defects, if present, should be remedied.

OPENING OF THE BOWELS—In rare instances it happens that the opening of the bowels is closed and the excrements cannot be discharged. In such cases an operation is necessary to save the life of the child.

THE BACK is flat. However, there exist sometimes along the spinal column bulgings, which slowly increase in size as the child grows older. They are mostly on the lower end of the spine, but are also found on the upper end and even on the back of the head. The cause is a malformation of the spinal column. The bones are open and allow the skin of the spinal cord to bulge. Bandaging is useless, even dangerous. Cramps may develop if its pressure is too strong. A cure can be expected only by an operation.

CHAPTER V.

FUNCTIONS OF THE BODY OF THE CHILD.

CRYING OF THE CHILD—The first thing which signalizes the arrival of the new-born into this world is a vigorous crying. This disposition of the baby to try its voice is not caused by hunger, as some mothers may think, but is the effect of a number of unused-to irritations perceived by eyes, skin, etc., to which the infant is so suddenly exposed. It is a wise arrangement of Nature. A quicker and more complete unfolding and development of the lungs could in no other way be accomplished. Crying is, therefore, not an unwelcome but a welcome event. If it does not come spontaneously, it is generally induced by physicians and midwives deliberately by subjecting the child to different kinds of irritation of the skin, mostly by a gentle slapping of its seat.

COUGHING AND SNEEZING—These occur sometimes, caused by small particles of slime which happen to find their way into the nose or throat of the child during its passage through the parts of the mother.

The **MUSCULAR MOVEMENTS** of a healthy new-born babe are vigorous and in jerks. They are induced by the same unused-to irritations of the skin that cause the first crying, and should not be restricted by too tight clothing. It is perfectly proper that opportunity be granted to the little one to make a full and free use of its muscles.

The **EYES** are opened only for a short while at the beginning. Even the dim light of a half darkened room is too strong an irritant for the delicate eyes of the baby. It takes time to get accustomed to the daylight.

With some children the eyelids are swollen

slightly at first. Their movements are thereby interfered with. It need not cause any anxiety, since the trouble will soon disappear spontaneously.

The POSITION OF THE LEGS is habitually the same after birth as it was before, that is, the knees are drawn up and the feet turned inward with the soles towards each other. This abnormal position of the legs will correct itself in time.

Some new-born get HICCOUGHS after birth. They are the same as with adults and last from ten to fifteen minutes. Directly after drinking is the time they occur. Significance need not be attached to them.

The first EVAÇUATION OF THE BOWELS occurs soon after birth. The excrements are tarlike, black, sticky, but without smell. They are called "meconium." The quantity is considerable. This appearance and quality of the stools continue up to the third day when they assume the gold-yellow color, usual with healthy babies.

The number of evacuations is from five to six in the first few days of life, until the meconium has been discharged, and a regular digestion been established. Then it is reduced gradually. We find, therefore, with healthy nurslings generally only two to three passages a day up to the sixth month of life and only one or two from that time to the end of the second year.

At this juncture we will not neglect to describe a disease the principal symptom of which is the appearance of blood in the stools. It is the so-called "Melaena, or Black Disease of the New-born," a rare but dangerous illness. The treatment is simple. It can and should be instituted by every mother at once and will prove life-saving in most instances. It is, of course, best to call a physician to the assistance of the mother.

BLACK DISEASE OF THE NEW-BORN.

There occur sometimes with new-born babies in the first days of their lives hemorrhages from the stomach and the bowels, manifested by the vomiting of blood and bloody passages. The blood may be bright or dark, it may be fluid or lumpy, depending upon the length of time it was retarded in the intestinal canal. The quantity of blood varies also considerably. In some instances it is so small that it can hardly be noticed, consisting of only a few drops; in other instances, however, it is so great that it seems rather astonishing that such a little creature can lose so much.

If the bleeding is small, the child recovers quickly; but if it is copious and re-occurs often, the child is lost, if help is delayed.

Treatment—Above all, the child should be kept warm and perfectly quiet. It should not be bathed, to avoid exertion, nor should it nurse. Cold, properly prepared cow's milk must be fed (see "Artificial Feeding of Infants"). This for two reasons: First, the efforts while sucking may start the bleeding anew; and second, the laxative qualities of the mother's milk (see "First Nursing of the Child") are, under such circumstances, dangerous. Not until the bleeding has stopped for two or three days may mother's milk be cautiously tried again.

A great number of remedies have been suggested and new ones are steadily added to the list. They are, however, all unreliable and should not be employed, except upon the recommendation of a physician.

The most reliable remedy, and at the same time the only one which can safely and effectively be used by the mother herself, is gelatine. On page 11 we have already spoken of it and have emphasized its peculiar and remarkable quality of stopping a bleed-

ing. For the manner of preparing, the mode of administration and the dose, we refer the reader to the page just mentioned.

The URINE is emptied for the first time soon after birth. It has generally a light color. Ten to fifteen discharges a day are the average. There are sometimes in the diaper, wetted by the urine, small quantities of a reddish-yellow powder, consisting of uric acid. They are of no significance and indicate no trouble.

CHANGES IN THE SKIN AFTER BIRTH—

With nearly all children the skin begins to undergo changes a few days after birth. The faint shade of yellow, present at birth in most instances, becomes more pronounced after the third day, turning into a reddish-yellow color. Weak children and those born too early show this change more distinctly than healthy ones.

So long as the child feels well and is lively, this change of color is of no consequence. The yellow tint disappears spontaneously after eight to fourteen days without any further treatment. It suffices to keep the child warm, to feed it properly and to regulate its bowels.

If the change becomes so pronounced that the skin looks like a lemon; that the white of the eyes is tinted dark yellow, and that the urine assumes a brownish-black color, the jaundice is developed beyond the normal limits. We must then conclude that a serious internal sickness exists, which must be located and treated.

A peculiar phenomenon is the SWELLING OF THE BREASTS OF THE NEW-BORN. It begins about the third or fourth day, increases up to the eighth or tenth day and gradually disappears. Most children are thus affected, boys and girls alike. The degree of the swelling is, of course, varying. In some instances the swelling is hardly visible, in others it

is so large that the breasts are converted into comparatively big, hard lumps. On pressure there exudes from the nipples a milk-like fluid. The sensitiveness varies also. Some children do not seem to mind the swelling at all; with others it is so painful that the slightest pressure causes them to cry.

Special treatment is not necessary. It is ordinarily sufficient to protect the breasts against pressure and to handle them gently. If the swelling is large and the skin tight, a gentle application of warm olive oil will relieve the tension. Rubbing and massaging is not advisable.

In some rare instances the tissue of the breast turns into matter. The resulting abscess must be opened by a physician.

SLEEP OF THE CHILD—The sleep of the new-born is nearly uninterrupted in the first weeks of its life. It awakens only to nurse and the efforts, while nursing, throw it back into the arms of the sleep. Not until the end of the first month does the child begin to keep awake for a few minutes. At the end of the first quarter of the year, it is strong enough to look around for two or three hours at a time. At the end of the first year its desire for sleep has decreased to about sixteen hours. But still in the second year the time spent in sleeping is longer than the time spent awake.

The sleep is deep and quiet. A child can be carried from one place to another without its slumber being interrupted. Its position is characteristic. It always lies on the back, elbows bent so that the little fists reach up to the neck.

A deviation from this rule always points to sickness. If the nursling does not promptly fall asleep after nursing, if its sleep is restless, if it awakens at unusual hours and is peevish, fretful, or cries, one must take these symptoms as indications that something is wrong, even though no other signs of sick-

ness may as yet be present. In most instances the digestion is at fault. Either the quality or quantity of food does not correspond to the needs of the baby and should be remedied at once. The sooner this is done, the better for the child (see "Insufficient or too Great Quantity, or Faulty Composition of the Milk").

CHAPTER VI.

NURSING OF THE CHILD.

We will begin the nursing of the child with the description of its domicile, "the nursery." Not all parents live in such pecuniary circumstances that they can afford to follow the advices here given in every detail. Yet, we will describe the nursery as it should be, without regard to the money involved. Be it, however, expressly understood, that elegance and luxury are not only immaterial but usually injurious. Cleanliness is the principal thing. Those in less easy circumstances may do what they can. Many an improvement, which costs but little or nothing, can also be made by them, if the good will is at hand.

CHOICE OF THE ROOM—The largest and most spacious room of the house is the best adapted to the nursery. It is none too good for the rising youth. Narrow, dark, and stuffy rooms are hot-beds of consumption, anemia, English disease and innumerable other sicknesses. The location should, if possible, be in one of the upper stories, where the air is purer and freer from dust, and on the south or southeast side of the building. It should be remote from the kitchen. At least two large windows are required, so arranged that both the lower and upper sash can be opened.

LIGHT AND SUNSHINE should be admitted freely. It is only in the first week after birth that the room may be slightly darkened, to allow the eyes of the new-born to gradually get accustomed to the light. Against the direct sunshine the children have to be protected.

WALLS—The walls should not be covered with paper, but be tinted with lime or kalsomined, or, best,

painted with oil. Many wall papers, especially the green ones, contain strong poisons; they are dusty and can only be cleaned imperfectly and with difficulty.

The FLOOR should be made of hardwood and should be free from cracks and crevices. It should be oiled and varnished with a material which hardens well and does not stick. If the floor is made of softwood, it is best to cover it with linoleum or paint it with an oil-color after all crevices have been carefully filled. This is the only way which allows it to be kept clean and in a hygienic condition.

Carpets are strictly forbidden. Nothing is more dusty, dirty, unhealthful and unhygienic. A rug, which can easily be taken up, cleaned and aired, is allowable in the middle of the room. To be sure that also from this no harm can come, it is best to keep it covered with a clean bedsheet. In this way it is impossible for dust to rise, or for the rug to be infected by the child while coughing, sneezing, etc., should this latter happen to be sick. The rug will thus afford an excellent cushion, on which the child may play without being exposed to the danger of subsequent infection.

The FURNITURE should be simple, so that it may easily be cleaned and disinfected. The smaller the number of pieces, the better for the child. All ornaments, carvings, etc., which catch and harbor dust and are difficult to clean, should be avoided. Plain goods are preferable. Upholstered furniture is prohibited unless the pieces are few and are covered with smooth and washable leather. The best, most approved and hygienic furniture is that made of enameled iron. It is quickly and easily cleaned and withstands disinfectants.

TOYS—Care should be taken that toys are not painted with dangerous colors, and that they are not made of lead. It is impossible to prevent chil-

dren from putting them into their mouths and from poisoning themselves, if the opportunity is present.

The most important furniture of the nursery is the **BED OF THE BABY**. Under no circumstances should the nursling be allowed to sleep in the bed of the mother. A separate crib must be provided for. It has happened very often that babies were found dead in the morning, suffocated or crushed by their own unfortunate mothers.

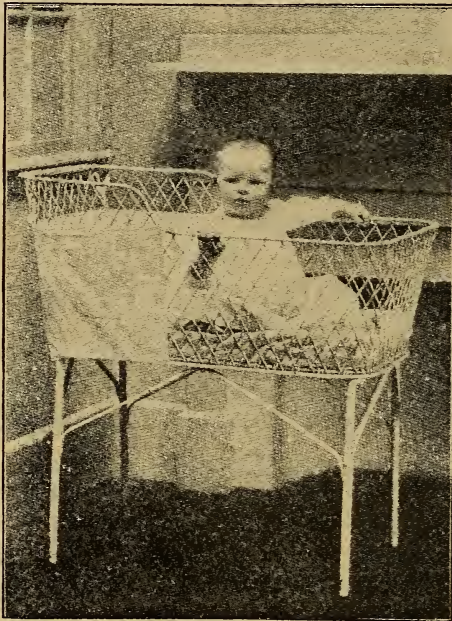


Figure 7. Baby crib, according to Holt.

The best sleeping place for the infant is an iron, white enameled, stable, latted bedstead as shown in Fig. 7. The lattice must be so high that the child, when growing older, cannot fall out, should it erect itself after awakening. Rockers, such as were in general use in former years and are still in use today with the poor and ignorant classes of our immigrants, are objectionable. Rocking, indeed, quiets the baby, but

at the same time unfortunately conceals the cause of its restlessness. We say "unfortunately" because children never cry without a reason. This should not be hushed over but should be removed. If this is done, the little creature will soon be in peaceful slumber without the rocking of its bed.

The best base is a horse-hair mattress. Over this comes a piece of oil cloth, over this a flannel cloth, and the whole is covered with a bed sheet.

The covering of the bed should be very warm in the beginning, since new-born babies are very sensitive to low temperatures. A feather bed serves the purpose best. Later, in the second half of the first year, especially in the warmer season, the feather bed should be withdrawn and woolen blankets substituted.

PLAYGROUND—It is unwise and impossible to keep the baby continually on the arm or on the lap when the time has arrived that it desires to take its first lessons in standing and walking. Then it is necessary to provide a place where it can creep, tumble and toss about according to its own fancy.

The place best adapted for the purpose is the bed sheet-covered rug in the middle of the room. It is not permissible to allow children to roll around on dirty floors over which relatives and attendants walk with dirty shoes. We all know that babies at this tender age do not as yet consider the consequences of filthy habits. The little fist which is now busy in mopping the floor, is a minute later delightfully sucked and cleaned with lips and tongue. If no precautions have been taken, can we wonder if disease germs of all descriptions, such as the microbes of consumption, scrofula, and other filth diseases, infect the baby?

In order to limit the child to its hygienic playground, it is necessary to prevent it from crawling or stepping over the edges of the rug. In Fig. 8 we see a fence, constructed for this purpose. The same

contrivance, improvised with chairs and boards, is considerably cheaper and serves the purpose fully as well. A further advantage of this device is the splendid support and hold it affords the baby in its untiring attempts at standing and walking.

The TEMPERATURE OF THE AIR should be about 66 degrees Fahrenheit. It must be measured with a thermometer. No nursery is complete without this instrument.

HUMIDITY OF THE AIR—A proper amount of humidity in the air is of the highest importance to the welfare of human beings. In summer Nature her-

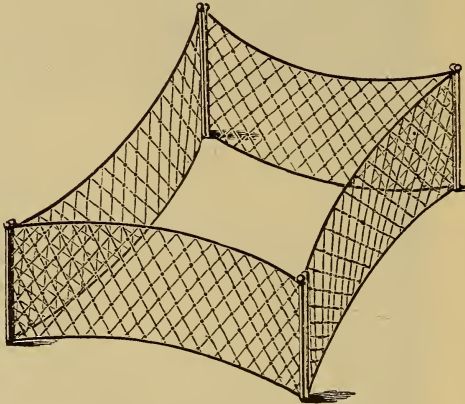


Figure 8. Fence around the playground.

self makes the necessary provisions. In winter, however, in houses heated artificially, the necessary increase in humidity is generally neglected. The air remains too dry. This is injurious to our respiratory organs and favors catarrh of the bronchial tubes and inflammation of the lungs. The dryness of the air extracts the moisture from the bronchial secretions and makes them tenacious and sticky. It thus takes more effort to expectorate and as a consequence the cough becomes violent and hacking. A great many of the catarrhs and colds, which are so frequently met

with in winter, are precipitated by this cause as well as aggravated and delayed in healing.

There are instruments to measure the humidity of the air. They are called "Hygrometers" (Fig. 9).

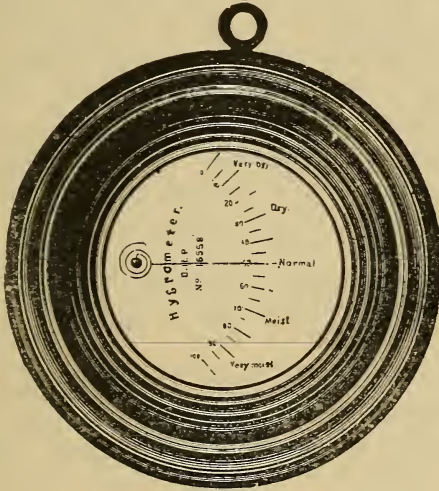


Figure. 9. Hygrometer.

Every druggist can procure one. For the benefit of those who possess or are going to possess such an instrument, it may be said that the proper amount of humidity is about 60 per cent.

HEATING—The best heating apparatus is an open fireplace or a stove. Both, if used, should be encased, that no accident can happen.

Less favorable is the heating of the room with hot water and steam radiators. The reason is this: Fireplaces and stoves are splendid ventilators. They constantly draw bad air out of the room, which is supplanted by fresh air coming from outside. Hot water and steam radiators warm up the air without promoting an exchange. A dead and oppressive atmosphere is, therefore, found in most buildings heated by radiators.

VENTILATION—No nursery is healthful with-

out a good and perfect ventilation. When the child is out of the room, all windows should be opened as wide as possible in warm weather. In summer time the upper sashes may be lowered when the child is in the room, day and night. In the winter, however, the little one must be removed until the aeration is completed and the temperature of the air is raised again to 66 degrees Fahrenheit.

If the nursery is heated by a fireplace or stove, ventilation will be sufficient if the windows are opened for a short while several times a day. If the room is warmed with hot water or steam radiators, efficient ventilation can not be obtained except by special ventilating shafts built during the construction of the house. They are found in most newer buildings.

From the above it may be learned that it is much more healthful to heat the house by fireplaces or stoves than by a hot water or steam plant. The temperature, however, produced by the latter is more even and steady.

The CLEANING of the nursery should be done in a proper manner. All brushing, sweeping and dusting with brooms, dusters and dry cloths is forbidden. Thus the dust is raised and disease germs, if they are present, distributed over the entire room. The cleaning is properly done with damp cloths. The dust adheres to them and can be removed effectively. This method should be followed, especially in cleaning floors.

Soiled diapers have to be removed from the nursery immediately. It is a filthy habit to throw dirty napkins in some corner, where they lie until their smell offends the nose. Night vessels must also be removed immediately and cleaned.

In order to facilitate the cleanliness in the nursery and protect the child from infection coming from outside, it is well to watch carefully that no

street dirt is carried into the room on shoes and dresses. If one considers what this street dirt is composed of, that it consists of kitchen refuse, excrements of men and beasts, expectorations of consumptives, discharges of people who are suffering from diseases of nose, mouth, etc., the importance of the advice will easily be understood.

DANGER FROM INSECTS—Space does not permit discussion of this highly interesting and eminently practical point at such length as would do it justice. It must suffice to have attention drawn to it.

Day by day our knowledge is increasing as to the surprising role the insects, especially flies and mosquitoes, play in the transmission of diseases. The spread of scourges such as scarlet fever, measles, diphtheria, typhoid fever, influenza, etc., have in many instances been traced with certainty to the mediation of flies; malaria, the yellow fever, and others, to the mediation of mosquitoes. The mode of transmission is different. Mosquitoes transfer the poison with their sting. Flies carry it from place to place, either having the disease germs clinging to the wings, body and feet, or depositing them with their excrements. These little mischief bringers are, therefore, not as innocent as they look to be. Where it smells, yes, where it stinks, there they go. Bad odors attract them. Loaded with deadly material, be it from a nearby sick-room or an adjacent toilet, they return and by strolling about and lighting either on a piece of bread or sugar or on a cup of milk or on the baby's face and hands, clothing, toys, bedclothes, etc., distribute the disease germs.

From this we can see that no child is safe from infection if flies are allowed to enter the nursery where catching disease prevail in the neighborhood, or open closets and pits offer opportunity for these pestiferous insects to be infected. It is well to remember this mode of transmission, if the origin of a case of infectious disease is difficult to explain.

CHAPTER VII.

CARE OF THE SKIN.

A well functioning skin is essential to the well-being and comfort of the individual. Neglect in its care leads to discomfort and sickness.

BATHS—To promote the healthful function of the skin of the baby, baths must be given. In the first weeks after birth, so long as the stump of the navel-string remains on the child, the bathing should be done on the lap of the attendant (see page 4). Later, after the navel is healed, the nursling should be put into the water.

Let bathing be daily in the first year, every second day in the second year. The best time is in the forenoon, always before meals, never with a full



Figure 10. Bath Thermometer.

stomach. The temperature of the water should be 98 degrees Fahrenheit for the first two weeks, 95 degree for the rest of the first year, and 90 degrees afterwards. With weak children the temperature is best taken a little higher. The water is to be measured with a bath thermometer, such as shown in Fig. 10. It can be bought at any drug store and costs 25 cents.

The bath should be given in a warm room, in the first weeks near a warm stove. Its duration ought not to exceed ten minutes. While bathing the baby, the mother supports its neck and head with the left hand so that the head is kept above the surface of bath water and its eyes can at no time come in contact with it (see page 19). The procedure is

as follows: First wash the face and pay special attention to the cleaning of nose and ears. For the eyes use an extra dish with clean, absorbent cotton and freshly boiled water. When the face is clean and dried with a soft towel, soap the head, wash and dry. Then clean the body, taking one part after another. Pay special attention to the cleaning of armpits, groins, the bend of the knees, opening of the bowels and genitals. Retract foreskin, if possible, and clean under it.

When the bath is finished, everything must be clean and dry.

All bath utensils, such as sponges, cloths, rags, etc., should be used for the child alone, and be thoroughly boiled twice a week in a solution of washing soda, one heaping teaspoonful to a quart of water. The mother must have her own utensils, lest she runs the risk of transferring disease from her own body to that of the child (see pages 4 and 19). For those who can afford it, it may be said that clean, absorbent cotton is preferable to all sponges, cloths, rags, etc. It is thrown away after every bath. The use of cotton is more expensive, but safer for the child and less troublesome for the mother.

The soap employed should be non-irritant. A good grade of castile soap answers the purpose.

After the bath the child is quickly dried and clothed.

CARE OF THOSE PLACES OF THE SKIN THAT ARE PREDISPOSED TO SICKNESS—
To these places belong principally the skin in the fold of the seat and that between the thighs. The predisposing cause is the macerating effect of the moisture retained in these creases and the frequent contact of the skin with the excretions of the body.

The way these two factors predispose to sickness can easily be understood from the following: The soreness and the inflammation of the parts men-

tioned, from which so many babies suffer, is invariably caused by the invasion of microbes into the skin. Different kinds are at work in different cases, but the two, pictured below, are chiefly responsible. The one is the chain coccus (Fig. 11), and the other is the



Figure 11. Chain coccus.

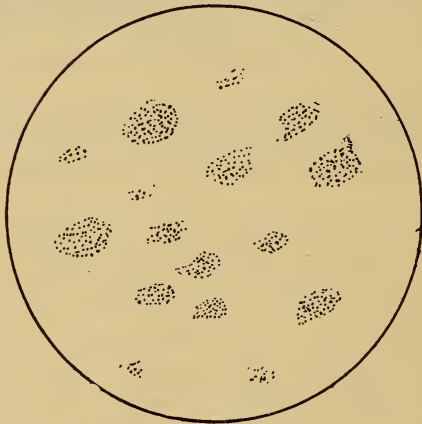


Figure 12. Grape coccus.

grape coccus (Fig. 12). They are named because of their grouping together in these specific forms.

Under normal conditions microbes have no chance to penetrate. The outer part of our skin is formed by a tough, horny layer (Fig. 13 b), which protects the lower and tender layers (Fig. 12 a) against the invasion of disease germs. If, by the action of excrements, urine and sweat, this protecting layer is softened and macerated, or if it is injured by mechanical insults, such as rubbing with coarse sponges, cloths, etc., the microbes gain entrance into the lower layers and inflame the skin. The consequences are reddening, swelling and soreness.

In order to avoid this outcome it is necessary to clean with warm water and to dry the places in question immediately after being soiled with the discharges from the bowels or the bladder, since these discharges are very irritating and are swarming with

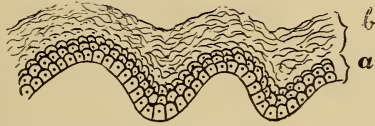


Figure 13. Section of the skin as seen under microscope. (a) lower, tender layers. (b) outer, horny layer.

microbes. Absorbent cotton for wiping is here of special advantage (see page 51). The use of sponges and rags is forbidden and nothing but cotton allowed for cleaning, wherever the skin is reddened and inflamed, for the former are too rough and cannot, under such circumstances, be kept in a satisfactory, clean condition.

Not only cleanliness as to the wiping material, but also as to everything else which comes in contact with the baby, is essential. The water for the bath must be freshly boiled, the hands of the attendant be clean and the bath tub be scalded at least once a week with boiling water or, better, disinfected with a solution of Rhenolin (see Prescription 2), two to three teaspoonfuls to a quart of hot water.

Next to cleanliness comes gentleness of the

treatment. The gentler the skin is handled, the better it will preserve and withstand the attacking microbes. In drying these places it is, therefore, advisable to absorb the moisture by patting, and not by rubbing, with the drying material, be it absorbent cotton or a soft, pliable towel.

When the cleaning and drying is finished, the parts must be powdered. Care should be exercised as to the kind of dusting powder used. As long as the skin is normal, the ordinary Borated Talcum Powder will, in most instances, suffice (Prescription 22).

Prescription 22.

Borated Purified Talc2 ounces

Better is a mixture of Zinc Oxide, Lycopodium and Talcum, equal parts (Prescription 23).

Prescription 23.

Zinc Oxide
Lycopodium
Purified Talc, each2-3 ounce ..

Corn starch is also frequently used for dusting. It is, however, inferior to the above mentioned preparations, because it lumps quickly, and its drying quality is insufficient.

All of the above mentioned preparations do not suffice if the skin has been infected, that is, if it is red, tender and sore. Then the following powder had better be chosen (Prescription 24).

Prescription 24.

Zinc Dioxide3 drachms
Purified Talc1½ ounces

This powder is strongly antiseptic and is well adapted for removing the poison from the skin.

There are cases in which no powder is able to fill the bill, in spite of conscientious treatment. A protecting layer of a fatty substance seems to be what is wanted. Vaseline is frequently used, but seldom effective, in many instances aggravating the condi-

tion. Under such circumstances the following combination will prove to give excellent satisfaction.

Prescription 25.

Zinc Oxide
Corn Starch, each4 drachms
Paraffin
Hydrous Wool-Fat, each3¼ drachms

The best soap is sometimes irritating if sore places have developed. Even plain water may make the condition worse, should the skin of the baby be very tender. Under such circumstances, it is best to lay the soap aside entirely and bathe the child in oatmeal water, prepared in the following manner: One to two pounds of oatmeal, bagged in cloth, are soaked in hot water for one-half to three-quarters of an hour, then the oatmeal is removed and enough water added to bathe the baby.

Large, reddened, and sore places, as they are most frequently found with weak and emaciated babies, always bear witness to the fact that either the care of the child has been very much neglected or the excretions from the bowels or the bladder contain abnormally acrid and corrosive substances, which do not allow the healing to advance. In the latter instance, it is necessary to first set aside the cause—the disease of the bowels or bladder—before the effect, that is, the soreness, can be removed.

The HEAD of the baby is also a place where diseases readily develop, if its care is neglected.

The secretion of a greasy substance is abundant in all places covered with hair. So especially on the head. This leads, in many cases, to the formation of scales and crusts on this spot. They should always be carefully removed. But, as in many other instances in which superstition interferes with health, so also in this. The removal of the dirt is by some persons considered dangerous. Old nursery tales tell that the affliction will go down to the eyes, if driven away from the head, and imprudent mothers

and attendants believe it. While cleaning the baby they anxiously avoid the places where the filth-disease is established, believing that they are doing good work for the helpless infant. Nothing, of course, is more absurd and preposterous. The places covered with scales or crusts not may, but must, be treated or the health of the child will suffer.

In slight cases, so long as the formation of scales and crusts is still limited and the skin itself is not yet affected, it suffices to soak the scalp in the evening with olive oil, cover it with a piece of oil-silk or gutta-percha paper, fasten this with a hood and allow to soften over night. A gentle wash with soap and warm water in the morning will remove the dirt and clean the scalp.

If, however, the secretions have irritated the skin and led to eczema, the use of soap and water is no longer allowed, as soap is now harmful. One can easily recognize the development of this disease by inspecting the skin. If, under the crusts, this looks reddish and inflamed and sends forth a thin, watery fluid, eczema is in existence. In neglected cases the formation of crusts gradually becomes more plentiful and sometimes so abundant that the entire head is covered with a bark-like, adherent layer, consisting of hair, grease and dirt.

The further the sickness has progressed, the more tedious and difficult is the treatment. The first step is to clear the field for action. To this end proceed as follows: Dip a cloth, large enough to cover all parts afflicted, in olive oil or salad oil, apply to the head, cover with oil-cloth, oil-silk or guttapercha paper, and fasten with a hood. Two to four applications, made in one or two days, are required to remove the crusts. When this is done, clip the hair as short as possible and keep it so until healing is completed, the purpose being to prevent the retention of secretions in bundles of entangled hair.

Now the treatment proper can begin. It is to no purpose to do this sooner, since no medicine can work until it can be brought in direct contact with the diseased skin.

In order to avoid a failure the remedy must be applied under a bandage similar to the one required for the removal of the crusts. The only difference is that instead of the olive oil a thick layer of one of the following ointments is taken (Prescriptions 26, 27 and 28).

The dressing should be renewed twice a day, in the morning and at night. It is important that the ointment be applied thickly, so that, so to speak, the inflamed skin is bathed in it. In no other but in this manner the formation of new crusts and a relapse into the old condition can be prevented.

The best remedy is Tolutin (Prescription 26).

Prescription 26.

Tolutin2 ounces

Next comes a 10 per cent ointment of Ichthyol (Prescription 27).

Prescription 27.

Ichthyol2 drachms
Hydrous Wool-Fat
Petrolatum, each1 ounce

Third is the following ointment (Prescription 28).

Prescription 28.

Diachylon Ointment2 ounces

The third salve is sometimes more effective than the second, but contains lead and its use should not be continued too long.

Tolutin should always be tried first. If it can not be obtained or, as it rarely happens, if it refuses to give satisfaction, one of the others may be employed.

The treatment must be continued until the last

vestige of the disease has disappeared and the skin has again assumed its natural color and appearance. The affliction will surely return if the treatment is stopped too early.

The skin will itch and by scratching the disease may be carried on the fingers from one place to another. It often descends to the face by creeping down from the forehead. The same ointments will also suffice in this emergency. No bandage is required for the face. Simple applications of the ointment, after the crusts have been removed, will prove sufficient in ordinary cases. Should the disease remain unyielding, the same dressing as on the head may be applied but must be provided with holes for the eyes, nose and mouth.

Children afflicted with the above described ailment are generally of low vitality and suffer from scrofula, anemia, English disease or other debilitating constitutional troubles. These must be treated at the same time in order to advance the cure as quickly as possible. For more detailed instructions we refer to the chapters at the end of this book.

CHAPTER VIII.

THE CARE OF THE MOUTH.

The care of the mouth should begin at the earliest days of life. In former times it was advocated by most physicians to clean the mouth of the baby after every meal. This practice has been abandoned. The mucous membrane of the mouth is too tender at this age to stand the somewhat rough procedure without injurious results. It is entirely sufficient, according to the newest investigations, to give the baby after feeding a teaspoonful or two of freshly boiled water in order to wash down the remnants of the milk.

Far more injurious than these small particles of food are the filthy objects, such as dirty fingers, dirty bread, dirty fruit, etc., which the child busies itself in putting into its mouth at every occasion, or which are given by the mother or nurse as pacifiers. These are dangerous, very dangerous, and have caused the death of many an infant. We caution against them in the most emphatic manner.

The child, we admit, requires something to bite on, especially at the time of teething. To satisfy its wants, a teething ring may be employed, made of ivory and fastened on a ribbon. This, if hung around the neck, will prevent the instrument from falling to the floor and being soiled. Rings made of soft rubber are to be rejected. They do not fulfill the purpose and cannot be kept clean.

PACIFIERS—At this juncture we cannot help saying a few words about the much condemned and yet so frequently used pacifiers.

A clean, unperforated, well cared for nipple would do but little harm. But this is not what is

generally used by the masses of the people. The old, worn-out rubber that is no longer fit for the bottle seems always just the thing to pacify. And how about its cleanliness? While the nipple used for the nursing bottle is generally kept in a fairly decent condition, the attendants, in most instances, seem to have forgotten every principle of hygiene as to the pacifiers. If the baby gets restless or begins to cry, the pacifier goes quickly into the mouth. The baby sucks a few times, swallows the air and, dissatisfied with the poor treat, spits the pacifier out. It rolls about on the floor. The child again begins to cry. The mother, in her despair, picks up the sacred peacemaker and returns it hurriedly into the mouth of her darling, sometimes even taking the precaution to clean it on her clothes. The same play! After sucking for a time, the child drops it or spits it out again. Again it rolls to the floor, again it is picked up and placed into the mouth of the infant, etc.

It seems impossible that such a story could be true. But it is. A score of times it has been witnessed by the horrified author of this book in families of ignorant people or in instances where babies were left to the care of irresponsible servants.

In cases in which little linen bags containing flour, bread dough, etc., are being employed as pacifiers, matters are still worse. They also fly about the floor or, if not in use, are laid aside on any box or piece of furniture, to be picked up and used again, if needed. It does not matter if the material enclosed in the bag begins to rot and decompose; it does not matter if it is covered with dirt and filth, or if flies, attracted by the odor, have used it as their dumping ground. The ignorant mother, nurse or servant does not know or care to know that the contents of the pacifier, by the action of countless microbes, have been turned into veritable poison. The child is

pacified! That's what she wants. What comes later is not thought of.

Is there any wonder that, under such circumstances, a multitude of mouth, stomach, and bowel diseases follow? Certainly not! Therefore, away with all pacifiers! Get rid of them! They are not necessary in any case, but harmful in many. The quicker they disappear, the better for humanity. If the child is restless or cries, inquire into the cause of the disturbance and remove it. That is better, much better, than to pacify. It is the only proper thing to do.

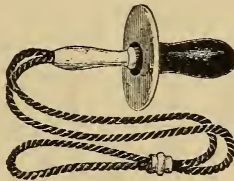


Figure 14. Pacifier.

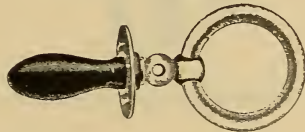


Figure 15. Pacifier with ivory ring.

If, however, in spite of all admonition, a mother thinks that she, as a baby, had a pacifier and that her baby shall have it also, let her select a pacifier as shown in Figs. 14 or 15, with an unperforated mouth-piece and fastened on a ribbon. If this is sucked, it will not fill the baby's mouth with air; if this is spit out, it will not roll to the floor and get dirty. If at the same time proper care is taken that the pacifier is frequently changed and sterilized in boiling water, we may accept with resignation what seems impossible to change.

THRUSH.

Thrush is a mouth disease in babies, which is well known to nearly every mother. It occurs principally in infants that are born with low vitality or have been reduced in their vital forces by long continued ailments, such as stomach and bowel diseases, English disease, etc. It is rarely met with in older children.

The disease is caused by a fungus, which grows in long threads. It is represented in Fig. 16 as seen under a powerful microscope. If this fungus comes into the mouth of weak children, be it with dirty

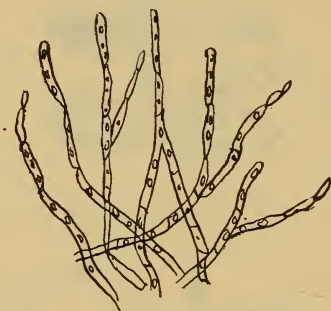


Figure 16. Fungus which is cause of thrush.

fingers or dirty objects such as pacifiers or with unclean food, it settles, grows and multiplies.

If this has happened, the mucous membrane at once begins to undergo characteristic changes. It becomes dry, sticky, and a little darker than normal. Tiny, white spots appear on the tongue, the inner surface of the cheeks, the gums and in the throat in smaller or greater numbers, which adhere tightly to the underlying tissue. If removed by force, they leave a sore and bleeding surface. These spots represent colonies of the above described parasites. Enlarging in size and increasing in number they gradually spread and, in neglected cases, cover the mucous

membrane of the mouth in a more or less continuous layer, as the grass covers the ground.

A few, isolated spots make no annoyance. They are often found accidentally by the mother. If the mouth is affected to a large extent, the mucous membrane becomes painful, the baby cries much, is restless, its sleep is disturbed, it takes its food with reluctance and suffers sometimes with slight fever.

Treatment—Breastfed children should drink through a nipple shield (Fig. 17) as soon as the thrush has been detected. This precaution is taken for the protection of the mother or wet nurse, since the breast, under such circumstances, is exposed to the danger of being infected by the baby and of becoming sore and inflamed (see “Inflammation of the Breast”).



Figure 17. Nipple shield.

Food which contains flour and is very sweet is injurious, since the growth of the parasite is thereby facilitated. Otherwise the kind of food is dictated by the condition of the stomach and the bowels without reference to the mouth disease.

Borax is the remedy most employed by both physicians and mothers. It is a good and effective medicine. It should, however, not be dissolved in honey as is generally done, but in water and glycerin, since honey favors the growth of the fungus. The proportions are: One to two heaping teaspoonfuls of Borax to two ounces of water and one ounce of glycerin (Prescription 29).

Prescription 29.

Sodium Borate.....	¾ ounce
Glycerine	1 ounce
Water	2 ounces

With this remedy or with the following solution (Prescription 30), the mouth of the child should be

Prescription 30.

Potassium Permanganate	2 grains
Distilled Water	1-3 ounce

washed several times a day, especially after every meal. The washing is done with a pad of absorbent cotton, tied around the end of a little, smooth stick, and saturated with the medicine.

In addition to this the white spots should be touched once or twice a day with the following solution in Prescription 31, or with the milder but not quite as effective remedy in Prescription 32.

Prescription 31.

Tincture of Iodine	½ drachm
Glycerin	3½ drachms

Prescription 32.

Sodium Borate.....	45 grains
Glycerin	1-3 ounce

These two remedies are best, but also the following are used (Prescriptions 33 to 35).

Prescription 33.

Silver Nitrate	5 grains
Distilled Water	1-3 ounce

Prescription 34.

Protargol	10 grains
Distilled Water	1-3 ounce

Prescription 35.

Solution of Hydrogen Dioxide.....	1-3 ounce
Distilled Water	2-3 ounce

If these instructions are followed, the white spots will disappear in a very short time.

CHAPTER IX.

QUIET LIFE FOR BABIES.

The nervous system of new-born children is as yet very weak and sensitive to even slight irritation. They should, therefore, be treated with the greatest gentleness. All sudden and violent movements, frightening and rough handling, either in joy or in anger, are forbidden. Even the noise and bustle of other older children in the presence of the new-born is to be avoided as much as possible. Also the carrying around of the little creature to relatives and friends, in order to make a show, and the kissing and fondling of it by anybody and everybody, who happens to visit, can bring nothing but detriment. Not only is the rest disturbed thereby, but the child is also exposed to infection with different kinds of sickness, should one of the visitors happen to be suffering from a cold, inflammation of the throat or any other communicable disease.

It is, therefore, best to allow the nursling to remain quiet at home with its mother or nurse. We say quiet. By this is meant that also at home the baby should have its rest and not be handled and carried all day on the arm of the attendant. Nor should it sleep except in its cradle. Soon, very soon, the infant learns what it can demand and what it can force. If the parents do not show in time that they are the masters, they will soon be compelled by pitiful crying to accede to the wishes of their offspring and dance to its piping (see "Crying of Children").

This danger of submission to the beloved darling is still more to be feared in times of sickness. But let us sound a note of warning. It is just at such times that the wisdom of the parents will be brought to a test. They should neither doze away and hush

over the pains of the child imprudently and carelessly with soothing syrups, pacifiers, etc., nor allow it to become the tyrant of the house. Not what the child wants but what is best for its recovery should be done.

SLEEP AT NIGHT.

The mother should begin immediately after birth to regulate the sleep of the child at night-time. It is astonishing how easy it is, on the one hand, to teach even new-born babies that no nourishment will be given between 10 or 11 p. m. and 5 a. m., or, on the other hand, to spoil infants, if they learn that by crying they can force the mother to give either breast or bottle.

The interest of both mother and child requires that the rest at night be not disturbed. If the crying cannot be avoided, it is better, therefore, to endure it for a few nights and get the child broken than to allow bad habits to be established and to lay a foundation for years of broken rest at night.

REGULARITY IN THE TAKING OF NOURISHMENT.

We need not here enter at length upon this subject, since it will be gone into more fully in the chapter on "Feeding." Be it here only emphasized that as with adults so also with children, big and little, they must be educated to the necessity of regularity at meals. When it is time, they should have their nourishment, not otherwise. Neither by crying nor by begging should the parents be induced to yield to the demands of their child at improper times. Much sorrow and chagrin will be saved for father and mother, much pain and suffering for the baby.

REGULARITY AS TO THE SECRETIONS OF THE BODY (STOOL AND URINE): EDUCATION TO CLEANLINESS.

After the sixth month, one can begin to teach the new-born to become regular with the discharge of its excretions, that is, of stool and urine. To this end

the baby should be held over a vessel, in the beginning each time after awakening, before the bath and before going to sleep, and later at regular intervals, at always exactly the same time. Sounds imitating the noises while discharging, such as ws, ws, ws, ws, ws, greatly facilitate the child's understanding of what is wanted. Very soon it grasps the idea of what is desired and gets used to discharging regularly.

When the child reaches the age at which it begins to reason, it should be guided to empty the bladder four times and the bowels twice a day, the latter best in the morning after breakfast and in the evening before retiring. Regularity, once established at such an age, generally continues throughout life and is conducive to health and happiness.

HARDENING OF CHILDREN.

The hardening of the child must begin in the first year of life. On page 50 we advised to reduce the temperature of the bath water after the first week from 98 degrees to 95 degrees and after the first year from 95 degrees to 90 degrees Fahrenheit. This is the first step in hardening. Later the child should be allowed to kick about in the air for five to ten minutes, unclothed, several times a day in a well warmed room. It seems to enjoy it and is comforted thereby. The air, while flowing freely about the naked skin, slightly cools the blood and strengthens the nerves.

Still later, at the end of the second and in the third year, it is advisable, after the bath, to let the wet skin come in contact with the air for a short time. The evaporation of the water is more cooling than the dry atmosphere and affords a more effective means of strengthening and hardening the skin as a protection against the disposition to catch cold.

Besides these bathing procedures, the time spent in the open air will do a great deal towards invigorating the little body. The change in the baby's bed

coverings as suggested on page 45 also aims at the same thing.

OUTDOOR LIFE.

Fresh, pure air is one of the first requirements for the sustenance of health and life. Therefore, the child should have it in abundance.

If the baby is born in summer and the weather is warm and calm, it should be carried into the open air three to four weeks after birth, having head and eyes protected against direct sunshine and too bright light. If born in winter, it should not leave the house until it is three months old and then only when the weather is fairly mild and, above all, windless.

From this time on frequent outings are very beneficial so long as the weather is favorable. If the weather is unfavorable, as on windy and rainy days—the degree of temperature being of less importance than the windiness—and the child cannot be carried or wheeled in the open, an extra good ventilation of the rooms should not be neglected.

If the child has become accustomed to the outside air, little fear need be entertained as to its catching cold.

The following pictures show babies of a German hospital for sick children, enjoying the fresh, pure air of the forest, and may brush aside the hesitations of mothers, too timid as to the exposure of children to the open air.

PHYSICAL EXERCISE.

It may seem strange that anyone should advocate physical exercise for such a tiny and puny little creature as a baby in the first and second year of life. And yet it is proper and reasonable. Every mother who ever observed how delighted her darling, after being undressed, kicked with its little arms and legs about the air, must have come to the conclusion that



Figure 18. Sick babies enjoying a sand bath.

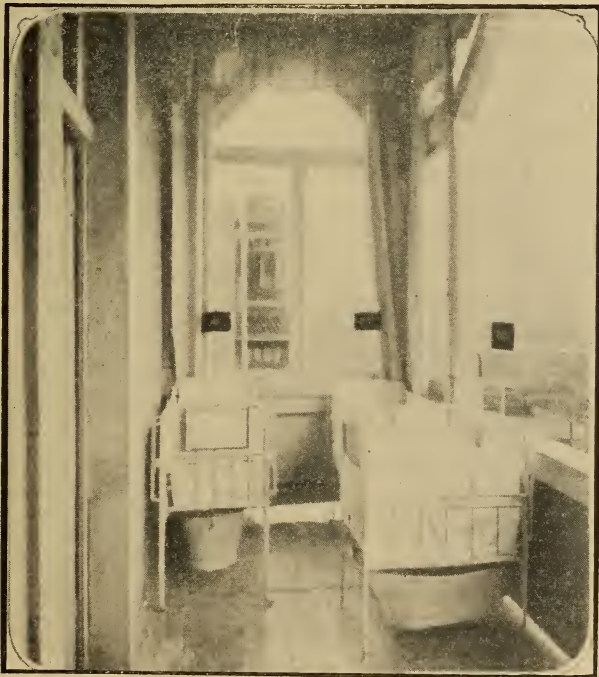


Figure 19. Baby-cribs on balcony for open-air treatment of sick babies.

there was something in it which was pleasurable to the little one. If she does not know it, we will tell her that it was the unrestricted use of its limbs that excited the feeling of comfort and satisfaction. And this it should have. It should be granted the opportunity to exercise and strengthen its muscles according to its own desire. To this end it is absolutely necessary that the clothing be not too narrow and tight around the body. Enough space should be left for a satisfactory, free movement of arms and legs. The baby knows well that it has a right to demand this and many a careless nurse has been reminded by persistent crying that the clothing was too tight (see "Crying of Babies"). In this light one can recognize that the exercises with the naked body as recommended above (see page 67) serve a double purpose—to harden and strengthen the skin and the nerves, and at the same time to give an opportunity to the muscles to develop. They should, therefore, not be forgotten.

Later, towards the end of the first year, the playground, as described on page 45, affords a splendid opportunity to satisfy the desire of the baby for physical exercise. It will use the fence to erect itself and to support the body while standing and walking—exercises which, if taken voluntarily, are very beneficial to the development of the muscles and of the inner organs. We say "voluntarily" advisedly, because exertions to which infants are coaxed too early are harmful. Children should not be urged by ambitious mothers to sit up, stand and walk before it is time and before Nature has prepared the body. This holds true especially with babies that are backward in their development and whose mothers believe they are doing good work in coaxing them to keep up with the others of their age. This is wrong, very wrong. Such practices may lead to the bending of the soft bones of the legs and arms or to curvature of the

spine (see chapter on "English Disease") and should be omitted. If development and strength have sufficiently progressed, the baby will, without urging, begin to lift up the head and make attempts at standing and walking. Until this is done, the mother should wait.

CHAPTER X.

CRYING OF CHILDREN.

We here devote a special chapter to the "Crying of Children," since the proper interpretation of this "symptom" is of utmost importance in the care of the child. We must, therefore, urgently request every mother to study and take to heart all we have to say about it. Much trouble will thereby be avoided.

The crying of children is an expression of displeasure and indicates that something is wrong. Just what is wrong the child cannot express in words. It is the duty of the attendant to find this out.

But the finding out requires thinking and this many mothers dislike to do. In their imprudence they simply take it for granted that the child is hungry, and act accordingly.

This conclusion is, however, very dangerous. It is by no means always hunger that causes the child to cry. There are many other reasons. It certainly does not spell hunger if the child cries immediately after being fed; it certainly does not spell hunger if in spite of the constant offering of nourishment the crying becomes more persistent. In these instances there generally exist disturbances of digestion associated with colics which the child tries to indicate. The thoughtless mother does, therefore, a great injustice to the child if she thinks of nothing else but to put the nipple of her breast or of a well-filled nursing bottle into the mouth of the baby, should it for some reason or other begin to cry. The infant, we admit, generally quiets down for a short while, but, after a short period, starts lamenting louder than before.

Such a mother may consider what she would do if she herself were suffering pain in her abdomen. Would she fill up her stomach? By no means! She would take no nourishment, or very little, until the pain had disappeared. But why should the baby be treated differently? It is but a human being, and a small one at that, made of the same flesh and blood and subjected to the same diseases as the adult. Why, therefore, treat it differently and fill its stomach with nourishment if it has pain in the abdomen? Breasts and nursing bottles are no pacifiers. They will, if given at improper times, increase the difficulty rather than diminish it.

A great many other causes besides disturbances of digestion may, under different circumstances, be expressed in tones of displeasure, such as wetted and soiled napkins, uncomfortable position, bothering creases in the bed clothes, too narrow dresses, irritations of the skin of all descriptions, too bright light, fissures at the opening of the bowels, prolapse of the bowels, difficult urination or the beginning of one of the many diseases that afflict the human race. Those red and inflamed places in the crease of the seat and between the legs (see page 51) need be mentioned prominently as a further, very frequent cause for crying. They become hot and begin to pain, if not properly attended to, and should always command first attention.

If the child begins to cry, a prudent mother will, therefore, first think and investigate and act afterwards. If, in spite of faithful research, it is impossible to find a cause, she should consider if it be not spite and caprice that prompts the spoiled darling to roar. If this seems to be the case, obedience must be forced.

Now, what is to be done if the nursling cries?

If it is time for feeding, the child should have the

breast or the bottle; if it is not and something must be given, the mother may try first some boiled water or fennel tea slightly sweetened with sugar. They are equally as effective as milk, but harmless. If this does not work and the mother is sure that it is not spite and caprice that is provoking the noisy conduct, she must see if the diapers are dry and clean, if the dresses are not too tight, if they do not pinch, or if one of the other above mentioned causes is prevailing.

Whatever cause or irregularity is found, must be removed. Red and sore places, if present, should always be dressed anew. If no cause can be detected and the mother knows that the darling cries because it is spoiled and wants to be taken up, she should let it lie and cry. The little mischief soon finds out that crying does not help and calms down. In a very few days it is subdued for the good of its parents and of itself. Many a bad hour, much chagrin and many a punishment is spared. But if ill-will and caprice have to be excluded; if the crying is more penetrating, pitiful and lamentable; if the child draws the legs up in seeming pain; if it has shown at the last meal that the appetite was impaired; if the movements of the bowels were not as good as before; if they were too hard or too loose or green—then a beginning indigestion must be thought of. An injection with very weak peppermint tea, a slight laxative, a hot linseed poultice upon the abdomen and withdrawal of all nourishment for a short time (see “Acute Indigestion”) will, in most instances, afford the desired relief and prevent troublesome and dangerous disease.

CONSEQUENCE OF CRYING.

Annoyance for those around is about the only bad effect from crying. No consequences are to be feared for the child unless there exists a disposition to rupture, navel or inguinal. The increased pressure in the

abdomen accompanying the crying causes the bowels to force into the rupture, thereby enlarging its size (see page 15).

SOOTHING SYRUPS.

On page 60 we called attention to the dangers threatening from the use of pacifiers. These are, however, innocent things in comparison with those deadly poisons which are sold in drug stores under the name of "soothing syrups," "baby friends," etc. We cannot be too emphatic in the condemnation of those remedies. It may seem impolite and harsh, but we cannot help saying that any mother who gives such medicines to her helpless baby proves by this deed to be either an ignorant or a careless and frivolous person. All these preparations, without exception, contain opium or morphine or one of its derivatives, substances which are extremely dangerous to the tender organism of a child.

It happens, we know, that pleasure-seeking mothers, in utter neglect of their duty, sometimes drug their babies into sleep with such remedies in order to be able to go to concerts, theaters and dances. But how they ease their consciences after such brutal deeds, we cannot comprehend.

An intelligent and conscientious mother, of course, will never use such remedies. But let every woman make it her duty to draw the attention of her friends and neighbors to the character of those preparations, which shame humanity.

CHAPTER XI.

SIGNS OF NORMAL DEVELOPMENT OF THE CHILD.

A mere glance generally suffices to assure the onlooker of the wellbeing or the non-wellbeing of a child. The round, fresh cheeks, the lustre of the eye, the pleasurable laugh, the roundness of the body, the full, plump limbs and the shiny skin—all bear witness that the health of the baby is satisfactory.

This satisfies most mothers, especially if the functions of the body take their normal course, that is, if the appetite is good, if the bowels move regularly and the sleep is undisturbed.

And yet this is not sufficient. The mother, while guarding the health and life of her baby, should not be like the young sailor, who, in making his first trip, does not notice the storm until it is over the ship, but like the old, experienced seaman, who, in spite of the clear sky and the sunshine, recognizes the approaching storm in the little, white cloud arising on the horizon.

The necessary instructions are given in this chapter. For, if she is familiar with what is normal, it is not difficult for her to detect the abnormal. If she takes the trouble to study carefully the following pages and follows their teachings, she will be able to recognize with ease and certainty the alarming cloud on the horizon of the health of her baby; she will be able to recognize with ease and certainty the earliest beginning of a disease, long before an uninstructed mother becomes aware of the approaching evil. At such times it is still easy to meet the threatening storm. A mother whose superior knowledge enables her to suppress a sickness before it has succeeded in taking root, is rewarded a thousand times for the labor necessary to acquire the information.

The principal signs of a normal development are:

1. The baby should increase in weight regularly.
2. Its organs should develop and functionate properly—head, muscles, teeth, temperature, breathing, pulse.
3. It should have from one to three daily movements of the bowels, which should be of uniform, paste-like consistency and of gold-yellow color in breast fed and a little harder and whiter in hand fed babies.
4. It should have neither vomiting nor diarrhea.
5. It should fall into a deep and quiet sleep after drinking.

INCREASE IN WEIGHT.

The observation of the weight of the nursling gives extremely valuable and important information as to its thriving. Every disturbance of health is manifested by a standstill or a diminution of the bodily weight. By comparing cause and effect one can further draw valuable inferences as to the vitality and the resisting power of the child. This means that the weaker the child, the more it will lose and the slower it will regain, and the stronger the child, the less it will lose and the quicker it will regain a loss caused by a like disturbance. If, therefore, a child from slight cause loses considerably in weight, and regains slowly what it lost, it is necessary to take special precautions in its care; for a more serious sickness, which is easily overcome by a strong child, may lead to death on account of the existing low vitality.

If at any time the weight of the child remains stationary or goes back, it is, as said, a sign that something is wrong. This is a hint which comes to the wary mother long before any other indication of sickness appears, at a time in which the baby may

still seem to be in the best of health. She sees the little cloud arising on the horizon and avoids the danger; the unwary one is surprised by the storm and in many instances can save the child from death only by untiring and devoted efforts during a long siege of sickness.

In order to control the weight it is necessary to weigh the child at regular intervals. The instrument to be used is either a scale especially made for the purpose (Fig. 20) or a decimal balance (Fig. 21).

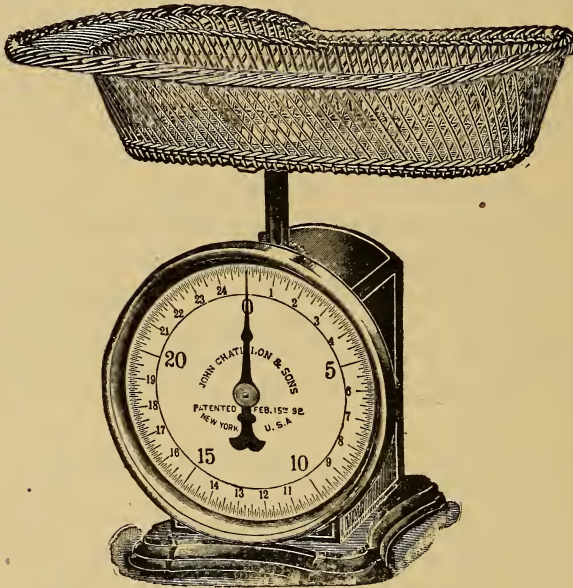


Figure 20. Scales for weighing babies.

The ordinary kitchen scale is too inaccurate and not suitable for the purpose.

The child is to be weighed always on the same day or days of the week, exactly at the same time of the day, best at noon before nursing. It is also permissible to choose any other hour, if it is more convenient. But it should always be the same hour, before the meal and either before or after a passage.

The reason for being so particular is this: Every meal and every passage has a great influence on the weight of the body. It is increased exactly as many ounces, drachms and grains as the nourishment weighs, which has been taken, and decreases exactly as many ounces, drachms and grains as the passage weighs, which has been discharged. If, therefore, the child is weighed the one time before, the other time after a meal, the one time before, the other time after a passage, great differences in weight must appear,

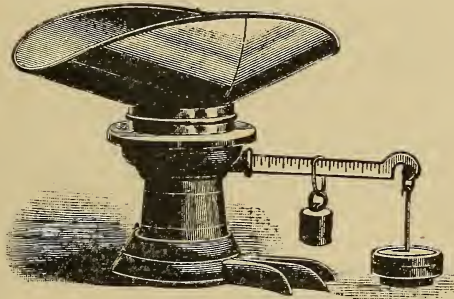


Figure 21. Decimal Balance.

which amount to nothing and confuse. Such annoyances can and will be avoided if the above instructions are followed.

Under ordinary conditions it suffices to weigh about once or twice a week. Delicate children may be weighed more often. The weight is taken either while the child is undressed or dressed. In the latter instance the clothing must be weighed separately and its weight deducted from the total.

The figures so found would best be written down in the following manner:

Weeks After Birth	Date	Weight of Child with Clothes	Weight of Clothes	Weight Proper of Child
END OF				
1 Week				
2 Week	<input type="checkbox"/>			
3 Week				

In figure 22 we see a chart representing the average weight of a healthy infant from the first day to the end of the first year. From this chart one can easily take the average weight of a child of any age. If, for instance, one wants to find the weight of a child eight months old, it is but necessary to go down the line under eight until it strikes the weight curve, and to follow from this point the line going to the left. If this is done, number 17 is found. Seventeen

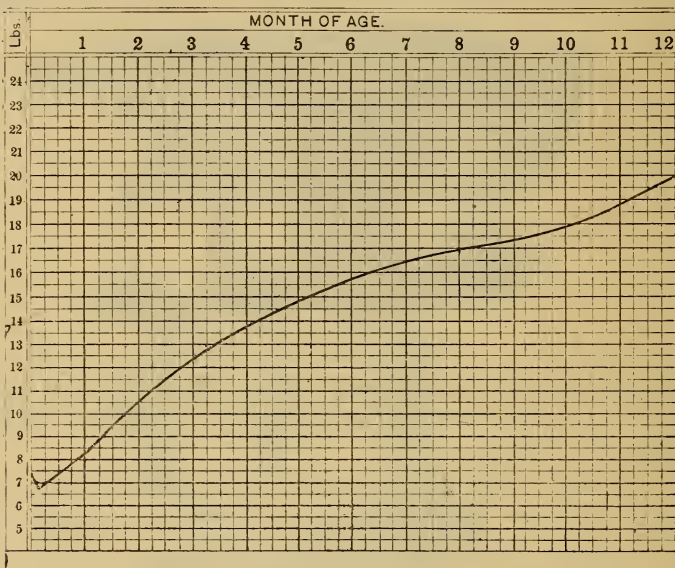


Figure 22. Weigh Chart, according to Holt.

pounds is, therefore, the average weight of a child eight months old.

By average weight is meant the weight as it is found when an average is taken from many children. If the child is heavier at birth than the average weight given, it generally stays ahead just that much over the average weight; if it is less in weight at birth than the average weight given, it often lags behind that much during the entire first year.

Every new-born, as demonstrated by the

weight chart, loses one-tenth of its weight during the first days of its life by the excretion of the urine and the great quantity of meconium (see page 37) accumulated in the bowels. On the third day it begins to gain. On the tenth day the weight is as great as it was directly after birth, that is, about seven and one-half pounds (see "First Nursing of the Child").

From now on the weight increases gradually and steadily, the average gain being four to five ounces a week during the first six months and three to four ounces during the following six months. An increase of less than four ounces a week for the first four to five months is insufficient and indicates either that the child is sick or that it does not get the proper amount or properly prepared nourishment.

Towards the end of the fifth month the child has doubled its weight and has tripled it in the fourteenth to fifteenth month.

A small decrease in weight should not cause the mother any worry. This cannot fail to occur, since the scales indicate the slightest disturbance in nutrition with exactly the same precision as a fine thermometer indicates the oscillations of the temperature. As an estimate one should always take the weekly increase. In this the smaller oscillations are eliminated.

If, however, there is a permanent standstill or even a loss of weight, it indicates an approaching illness. Then it is time to investigate, even if the child shows no other sign of sickness. The perusal of the following chapters on the development of the head, muscles, teeth and on the nature and quality of the breathing, temperature, pulse, movements of the bowels, etc., etc., will give the necessary information.

DEVELOPMENT OF THE HEAD.

The different bones of the head of a baby are at birth still movable toward each other (Fig. 23). They are separated from one another by "sutures" leaving

two large openings, called "Fontanels," a larger one on the front of the head (Fig. 23a), and a smaller one on the back of the head (Fig. 23b). This larger, anterior fontanel can easily be felt by the mother. It is the soft, square place over the forehead. There the outer skin lies directly upon the brain and the pulsation of the brain vessels can be felt. It is 1 to $1\frac{1}{4}$ inches long and about 1 inch wide.

The smaller fontanel, located at the back of the head, closes toward the end of the second month and can be felt no longer after that time. The sutures

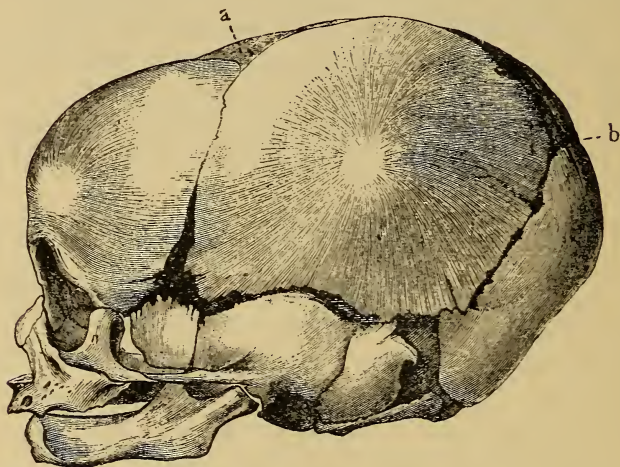


Figure 23. Baby Skull, showing Bones, Sutures and Fontanels.

close and ossify in the sixth to seventh month, whereby the different bones become immovable towards each other. The larger fontanel in the front remains open the longest. It does not close until the fourteenth to twenty-second month, when it becomes imperceptible to the touch.

If the closure and ossification of the bony capsule of the head occurs sooner than stated, it is of no significance. If, however, the larger, anterior fontanel remains open until after the second year, that is, if its place stays soft and the pulsation of the blood vessels

of the brain continues to be perceptible to the touch, it is safe to conclude that the English Disease is in existence.

Under such circumstances it is best to look at once for the further symptoms of this disease to confirm the diagnosis and, if necessary, to institute the proper treatment immediately (see chapter on "English Disease" at the end of this book).

DEVELOPMENT OF THE MUSCLES.

The ability of the nursling to make use of its muscles, that is, to move its body and its limbs, serves as a guide in judging the development of the muscles. Note the following landmarks:

The child begins to erect its head in the third to fourth month; it can sit up erect for a few minutes in the eighth month; it makes its first attempts at walking in the ninth to tenth month; holding on to a chair or some other object, it is able to stand in the eleventh to twelfth month. But not until the fourteenth to fifteenth month do the legs grow strong enough to carry the body with some degree of safety and enable the child to walk a few steps without support.

In some families the children begin to walk much earlier. If this is done voluntarily, it is safe to allow it. No mother, however, should urge her child to sit up, to stand or to walk, before its natural instinct prompts it to do so. If the bones and muscles are sufficiently strong, the baby begins of its own accord. If it does not, but is urged in spite of the unpreparedness of nature, the child is in danger of bending its bones or of acquiring a curvature of the spinal column, which can be cured only with difficulty, or not at all (compare with this what is said about this point in the chapter on the "English Disease").

More often we meet with a belated rather than a too early development of the muscular system. Instead of at the fourteenth to fifteenth, the children be-

gin to walk at the twentieth to twenty-fourth month or even later. In such cases the cause should be looked for. It may lie in a simple malnutrition or in an arrested development, left as a result of a preceding sickness, or in the existence of the English Disease. This latter is most frequently the case. The symptom is a conspicuous hint of Nature and should never be neglected. Whatever trouble the investigation discloses, immediate treatment is necessary.

DEVELOPMENT OF THE TEETH.

The first set of teeth consists of twenty so-called "milk-teeth." They always erupt in groups, several at a time, in the following succession:

In the sixth to ninth month the lower, central incisors erupt.

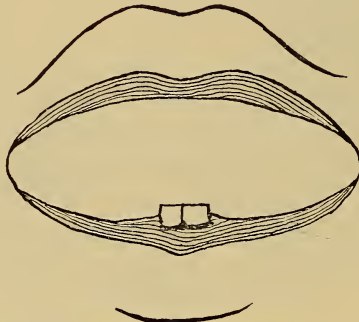


Figure 24. Number of teeth in sixth to ninth month.

In the eighth to thirteenth month the four upper

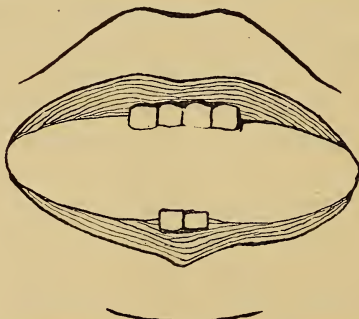


Figure 25. Number of teeth in eighth to thirteenth month.

incisors erupt, the central first, the lateral later.

In the twelfth to fifteenth month the four anterior molars and the two lateral incisors erupt. The succession is—molars in the upper jaw, incisors in the lower jaw molars in the lower jaw.



Figure 26. Number of teeth in twelfth to fifteenth month.

In the eighteenth to twenty-fourth month the four canines erupt. The upper ones are called eye teeth.



Figure 27. Number of teeth in eighteenth to twenty-fourth month.

Finally, in the twenty-fourth to thirtieth month the four posterior molars erupt (Figure 28).

Children have, therefore:

At 1 year	6 teeth
At 1½ years	12 teeth
At 2 years	16 teeth
At 2½ years	20 teeth

TOO EARLY AND TOO LATE DEVELOPMENT OF TEETH.

The eruption of teeth before the sixth to seventh month is seldom, but happens sometimes. A number of cases have been reported where children have been born with teeth. Delicate and sickly children get their teeth somewhat later than healthy and strong ones.

A great and harmful influence upon the eruption of the teeth is exerted by the English Disease (see chapter on this disease at the end of the book). If it develops early, that is, in the first months of life, the eruption of all the teeth is postponed, which means that the child begins to teethe too late; if it develops



Figure 28. Number of teeth in twenty-fourth to thirtieth month.

later, after the first teeth are out, the eruption of the teeth which are still coming is delayed, which means that the child stays unusually long on a certain number of teeth.

Any delay in the development of the teeth at once suggests, therefore, the existence of the English Disease and invites the study of the chapter devoted to it. It must be taken as a further hint that the English Disease exists, if the teeth which come normally in groups, erupt singly, or if the child remains for a long time with an uneven number of teeth.

TEETHING SICKNESSES.

We will not allow this opportunity to pass with-

out saying a few words about the so-called "teething sicknesses."

Teething is a normal process and as such is accompanied neither by fever, nor diarrhea, nor cough, nor any other sign of serious illness. The conduct of the child, of course, varies according to conditions.

Sometimes the eruption passes so easily that the mother fails to notice it and some day is surprised by the presence of the tooth. Slight disturbances, however, develop in most instances. There will be a swelling, redness and sensitiveness to the touch at the place the tooth is coming; the secretion of spittle is increased and sometimes is so abundant that it flows constantly from the mouth of the baby, wetting bibs and clothes and giving cause for catching cold. The appetite is decreased and the passages are somewhat oftener and thinner. The reflex irritation emanating from the tooth throws the nervous system of the child into a state of greater irritability. The infant becomes disquieted, restless, cries more than usually, and does not sleep so well. Even cramps are sometimes brought on with children of a nervous nature. Whether the teething can be blamed directly for eruptions of the skin and inflammations of the eyes, as is often done, remains doubtful.

At this juncture, let us give the urgent advice to be extremely cautious in blaming dentition for all abnormal symptoms which may arise during the time of the eruption of the teeth. Many a child, that would have certainly been saved by a timely treatment, had to pay the penalty with its life for the imprudence of its mother, who did not want to interfere because she considered the ailment but a teething sickness and waited for voluntary improvement until the time for salvation had passed.

If, therefore, the above mentioned slight disorders do not stop with the eruption of the tooth, or if from the beginning serious symptoms prevail, such

as diarrhea, vomiting, coughing, fever, etc., a conscientious and faithful mother will not satisfy herself with the explanation that the "trouble comes from teething." She will inquire into the cause and, following our most urgent advice, attend also at the time of teething to all sicknesses with the same circumspection and carefulness as she would at any other time. It is, indeed, better to call the physician in time than to mourn a death which could have been prevented.

Proper observation of pulse, breathing and temperature is essential to enable one to pass judgment on the well-being of a child. These are those phenomena of life which manifest the earliest and most conspicuous changes in case of sickness and which at the same time can easily be studied and understood by every mother.

PULSE.

The condition of the pulse gives an approximate idea as to the condition of the general health. If the pulse is good, regular and strong and the number of its beats normal, we know that no serious disease can prevail. If, however, the pulse is weak, soft and irregular and the number of its beats increased, we should take this as a sign that danger is either present or coming.

Every mother can easily feel the pulse of the infant by placing her middle or index finger gently upon the lower arm a little above the wrist and near the thumb side.

The place where the pulse can best be felt is not the same in all persons. It depends upon the location of the large blood vessel coming down the arm. Where this lies nearest to the skin, there is the best place for feeling, since it is the pulsation of the blood in this blood vessel that causes the pulse. If the pulse cannot be felt on the above mentioned spot, it

is advisable to feel gently a little higher or lower or to try the other arm, for both arms are not always alike. The pulse may be plainly palpable on the one arm and only with difficulty on the other.

It needs, of course, a little practice as in all other things. If the mother cannot find the pulse at once, she should not give up in despair. She should try to find it on older children, or better still, on adults or on herself. If she has once found the pulse, she will be amazed to see how easy it is to find it again either on the same person or on the baby. Therefore, patience and perseverance!

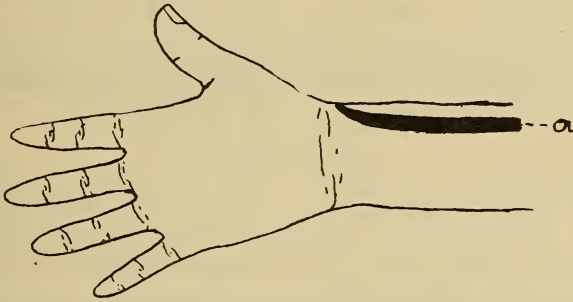


Figure 29. The black line (a) represents the blood vessel coming down the arm and marks the place where the pulse should be felt.

If the mother feels the pulse of her baby often, its normal condition will soon be so distinctly impressed upon her mind that she will easily detect abnormal deviations.

As said, it is necessary to feel gently. By strong pressure the blood vessel is compressed and no pulse can be felt.

The number of the beats is found by counting them for one minute. This number varies directly after birth between 130 and 140. It soon declines and is on an average 120 to 130 during the first year of life, 105 to 110 in the second, 100 to 105 in the third year, etc. With adults it is reduced to from 70 to 80.

These are averages, that is, pulses as they are generally found in healthy human beings. The num-

ber may be a little higher or lower without indicating illness. It is not only different with different people but also different with the same person under different circumstances, as for instance, higher after bodily and mental efforts, awakening from sleep, etc., and lower after bodily and mental rest, during sleep, etc.

If, however, the number of the beats is much higher than stated above; if the pulse is not as strong and regular as it should be, but weak and irregular, it indicates sickness. For this reason the mother should not only count the beats but also pay attention to the regularity and the quality of the pulse. A normal pulse is as regular as the swinging of the pendulum of a clock or the tick of a watch so that deviations in this respect cannot be overlooked.

BREATHING.

As with the pulse so it is with the breathing. This is also changed with increasing age and the occurrence of sickness. The mother should, therefore, be acquainted with the normal condition also in this respect.

The observation of the breathing offers no difficulty. The number of breaths is found by counting them for one minute. It is from thirty-five to forty with children in the first year of life but sinks gradually to from sixteen to twenty in adults.

The number of breaths is increased by bodily and mental efforts, during fevers and especially in sicknesses of the lungs.

The breathing is perfectly regular only during sleep, somewhat irregular in the waking state. This is of no consequence.

There are normally no breathing noises, except that soft and even sound which is heard when the ear of the examiner is pressed against the breast of a healthy child. Whistling, wheezing and snoring

tones coming from the breast always point to sickness. They are heard in diseases of the larynx, bronchial tubes and the lungs.

TEMPERATURE.

Most ailments afflicting the human body raise the heat of the blood. The observation of its temperature is, therefore, of the utmost importance. It at once reveals the beginning of diseases and is one of the most important measures which assist in passing proper judgment during existing fevers. The instrument used for this purpose is called "fever thermometer" (see Fig. 30).

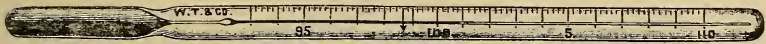


Figure 30. Fever Thermometer.

We regard it as an indispensable equipment of every mother and cannot urge too strongly that one be procured, if there is none in the house.

The taking of the temperature need not be done with the same regularity as the taking of the weight. If, however, there arises a suspicion that the child is sick, it becomes indispensable. No mother should "guess" so long as we have or can have at our command means to "know" with certainty if the baby has fever or not. Even the most experienced physician will make grave mistakes if he attempts to judge the temperature of the body by the touch of his fingers. And how much more is a mother liable to do this? Every attendant, even the most unexperienced, however, can ascertain definitely if the heat, the child seems to be suffering from, is fever or not, if she takes the time and trouble to use the thermometer. And this should be done.

If there is no fever, it disperses and relieves the existing anxiety; if there is fever, a disease is in existence which calls for immediate interference.

Fever thermometers differ from ordinary thermometers. They register only the temperature between 90 or 95 and 110 degrees F. Furthermore, their quicksilver does not retract, but remains at the highest point reached, when the instrument has been used. It is, therefore, not necessary to read the temperature hurriedly. The instrument can be taken away from the child and studied with leisure. If all information that can be gotten has been obtained, the quicksilver is brought down. The proper way to do this is by taking hold of the instrument in the way as shown in Fig. 31, and giving it a full arm down-

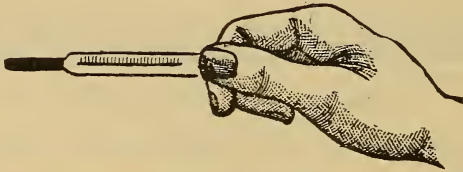


Figure 31. Shows how to hold the instrument while bringing down the quicksilver.

ward swing ending with a jerk. In this way two or three swings will, in nearly all cases, be sufficient to place the quicksilver column down and in position for further use.

The shaking down of the quicksilver is sometimes somewhat difficult in new instruments. This is no detriment. It will be easier, the longer the instrument is in use. It may also happen that after long usage the quicksilver does not remain at the highest point but retracts spontaneously as soon as the thermometer is taken away from the patient. This does not render the instrument useless. The measuring of the temperature will be correct nevertheless. The only inconvenience, caused thereby, is that the temperature has to be studied before the thermometer is removed from the sick person.

There are a good many kinds of fever thermometers on the market, good ones and bad ones, prac-

tical ones and impractical ones. What is good and what is bad, what is practical and what is impractical is rather difficult for a layman to decide. The buying of a thermometer is, therefore, just as much a matter of confidence as the buying of pure, unadulterated drugs. One must buy under guarantee from a reliable firm in order to be sure to get a correct and reliable instrument.

Place Where to Measure: The best and most reliable results are obtained if the quicksilver container of the thermometer is placed into the rectum, that is, into the lowest part of the bowels. But this place is inconvenient, distasteful and, with restless and restive children, somewhat risky, since there is danger that the glass may break. The mother, therefore, may better select another place, that is, the mouth with older and more reasonable children, the legs or the armpit with smaller and refractory ones. Both places will do under ordinary circumstances, if the necessary precautions are taken. In the mouth the instrument is to be placed under the tongue and care to be taken that the lips are tightly closed. As a further precaution it is required that the child does not eat or drink for at least ten to fifteen minutes before the temperature is tested. The contact of cold or hot food or drinks changes the temperature of the mucous membrane of the mouth and may lead to mistakes.

Taking the temperature between the legs is the most convenient way with small children but is also most likely to lead to errors, if certain precautions are not taken. If the child has been lying for a long time with legs apart, the skin of the legs may have cooled so considerably that a correct temperature can not be obtained. This pitfall should be avoided and with boys the fever be tested only if the legs have been closed for a long time. With girls the matter is simpler. It is always possible to take their temperature

sible, that means, the temperature is not always the outer genitals, so that the quicksilver container is entirely hidden.

It is needless to say, of course, that, while the temperature is being taken, the legs of the child, boy or girl, must be pressed together.

What is said of the legs is also true of the armpits.

The thermometer is left in position for two or three minutes and then read. High grade instruments rise in one minute, but two to three minutes generally give better results.

Reading the Thermometer—The reading of the thermometer seems, in the beginning, to be a somewhat difficult task for many mothers. It is, however, a very simple matter, as soon as it is understood.

To facilitate the understanding let us study such an instrument somewhat closer. We find on its upper surface two different kinds of division lines, long ones and short ones. The space between two long lines is one degree and the space between two small lines is one-fifth of a degree. When this is understood, one must try to find the quicksilver column, that silvery thread in the middle between the outer longitudinal edges of the instrument (the black middle lines in Fig. 32 represent the quicksilver columns). Its end is higher or lower according to the temperature last taken. The number it stands on gives the temperature measured. If the end stands on 96, it means a temperature of 96 degrees; if it stands on 104, it means a temperature of 104 degrees, etc. Fig. 32 may serve as an illustration.

Normal Temperature: The arrow, which stands between 98 and 99 mostly at 98 3-5, means normal, that is, normal with adults. The average normal temperature of a nursling is a little higher, usually between 99 and 99 2-5 degrees. But with both babies and adults oscillations are pos-

sible, that means, the temperature is not always the same even under normal circumstances. It may be a little higher or a little lower. If, however,

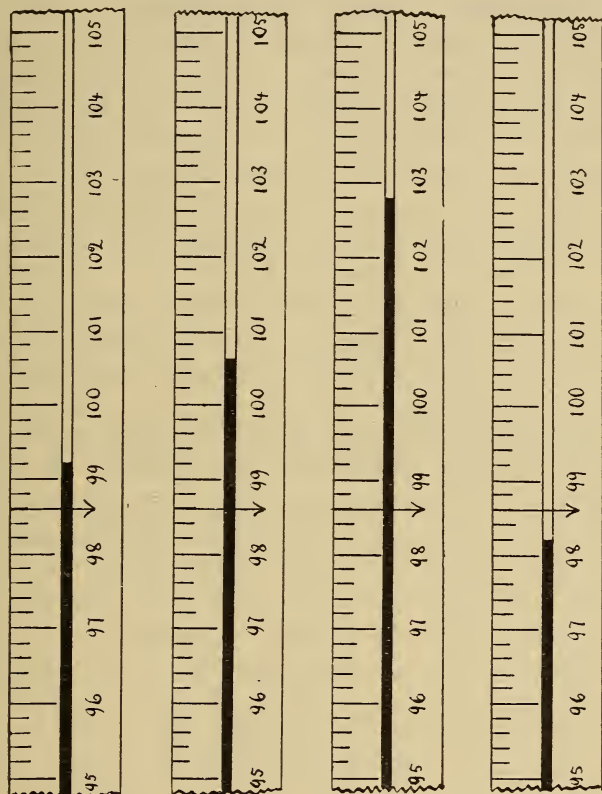


Figure 32. Shows different degrees of temperature, the middle black line representing the quicksilver column.

In No. 1 its end stands on 99 1-5, indicating a temperature of 99 1-5.

In No. 2 its end stands at 100 3-5, indicating a temperature of 100 3-5.

In No. 3 its end stands at 102 4-5, indicating a temperature of 102 4-5.

In No. 4 its end stands at 98 1-5, indicating a temperature of 98 1-5, etc.

the temperature of a nursling is higher than 100 degrees, it has fever. Then sickness exists and immediate steps must be taken to ward off the imminent

danger. As to the cause of the frequent rise of temperature in the new-born, compare the chapter following later: "The First Nursing of the Child."

Treatment of the Thermometer: Immediately after using, the thermometer must be cleaned with lukewarm water and soap or disinfected in an antiseptic solution, if it has been used with a child afflicted with a catching disease. The antiseptic best to be employed is Rhenolin (Prescription 36), one teaspoonful to half a pint of water. A five per cent solution of Carbolic Acid or a solution of Corrosive Mercuric Chloride (see page 24), are also reliable. Hot water should not be employed for cleaning since it will burst the instrument. After cleaning, the quicksilver should be brought down and the instrument is ready to be laid aside.

Advantages Derived From the Use of the Thermometer in the Hands of the Mother in Case of Sickness: A reliable control and a proper and effective treatment of a sick baby can only be instituted and carried through if the temperature is taken at regular intervals. And who else shall take it outside of the hospital but the natural attendant of the child, the mother? Only a comparatively few can afford to hire a trained nurse. A repeated daily reading by the physician is still more expensive, since every call has to be paid for. And yet the taking of the temperature should not be neglected. It is absolutely indispensable for the proper information of the attending physician. The oscillations of the temperature at different hours of the day are so great in many instances that one daily test will not, and should not, satisfy a conscientious and careful medical attendant. A perfect control over the case is not possible under such circumstances. If, however, the mother takes the temperature and pulse at regular intervals and puts them down on paper, the physician on his daily visit can look over the record, so compiled, and is

thus enabled to get a clear idea as to the happenings during his absence. This is of great benefit not only to the little patient but also to the parents if they are not so fortunate as to belong to that class of society to whom money is no object. Many times, indeed, the hiring of a costly, trained nurse can thus be avoided and many a call of the physician be saved. And yet the case is not neglected, for the great help thus rendered by the mother more than compensates a less frequent calling of the doctor.

APPEARANCE AND CONSISTENCY OF THE EVACUATIONS OF THE BOWELS.

“The daily control of the passage combined with an exact report as to the number of passages, food and weight of a child is far more important than the daily inspection of an infant. And yet, many physicians do the latter with devotion, the first not at all,” says Prof. Biedert, one of the most prominent specialists on diseases of children in Europe, in his book on “Feeding of Infants.” And he is perfectly correct. Too little attention is paid, not only by the laity but also by the medical profession, to the conditions of the passages during infancy in spite of the important hints which can be taken therefrom. The discharges from the bowels are certainly the best indicators as to the progress of the digestion, their abnormalities pointing out beginning illnesses which otherwise would elude an early detection.

We will, therefore, describe not only the differences in the appearance and consistency of normal, healthy evacuations caused by different kinds of food, but also the most important changes in case of sickness. The contrast affords a better elucidation and will make a deeper and more lasting impression upon the mind of the mother.

The passage of a **breast-fed**, healthy baby is of a golden-yellow color similar to that of the yolk of an egg, and of a smooth, soft consistency. It is not lumpy

nor mixed with white flakes. It smells slightly and agreeably sour.

The passage of a **baby fed on cow's milk** is of a light yellow to whitish color and slightly thicker. Its smell is not sour but somewhat flat and stale.

The passage of a very young **baby fed on butter-milk** looks greenish-yellow, but assumes a more straw-yellow color as the latter grows older. It is also somewhat thicker than the passage of a breast-fed baby, but not formed and has a slightly flat odor.

The passage of a **baby fed on proprietary foods** is brown even with infants under one year of age. The same color obtains if plenty of oatmeal, barley, rice or other cereals have been added to the milk.

The passage is **dark brown to black** if children get bismuth, tannin or iron medicines.

The passage is **green** only with babies suffering from digestive disturbances, the green color being caused by a change of the admixed gall. The greener the passage, the worse the condition of the bowels. The passage now and then turns green after being exposed to the air for some time. This indicates a slight disturbance and may be heeded as a warning. The administration of calomel also turns the color of the passage green.

Slime in the passage indicates a catarrh of the bowels. If the slime is well mixed with the rest, the catarrh is higher up; but if it is in lumps, very abundant and not well mixed with the fecal matter, the catarrh is lower down near the outlet.

Blood and slime appear in the passage if there exists a more severe catarrh of the large intestines or an invagination, that is, the slipping of one part of the bowels into another as of the hand into a glove. In the first instance the trouble begins with a diarrhea, which is followed by slimy and later by bloody discharges; in the second instance slime and blood appear suddenly without preceding diarrhea. This

latter condition is very serious and calls for the immediate employment of a physician.

Passages containing **white undigested flakes** are called "dyspeptic passages." The flakes consist of either casein, that is, small particles of cheesy substance, or of fat. In the first instance they are hard, yellowish and smell foul; in the second instance they are soft, smooth and smell like sour cream or rancid butter. The flakes indicate that the child receives more than it can digest either of casein or fat according to circumstance. The dyspeptic passages are generally increased in number, three to eight a day, sometimes more fluid than normal and of white or whitish-yellow color or more or less green.



As to the treatment, it is of utmost importance to ascertain positively if the flakes consist of casein or fat. The following simple test clears the matter in doubtful cases: Take some of the flakes and mix them with one-half or one tablespoonful of strong, undiluted alcohol or, still better, ether which is obtainable in any drug store. If the flakes dissolve, they consist of fat; if they do not dissolve, they consist of casein. In the first instance the amount of fat, in the second instance the amount of casein in the nourishment must be diminished. For particulars see "Artificial Feeding of Infants."

Foul **smelling and offensive passages** indicate a rotting of the contents of the bowels. Too much or an unsuitable nourishment has been given.

Thin and watery passages are met with in diarrhea. The number of the evacuations is not always increased. One or two passages a day constitute a diarrhea if the consistency of the discharge or discharges is watery instead of being pasty. Generally, however, the number of the evacuations is increased under such circumstances. Errors in diet are as a rule the cause.

Very frequent and watery passages, generally associated with fever, accompany infectious diseases of the bowels, such as summer diarrhea, cholera, etc.

PART II.

 Feeding of the Infant. 

CHAPTER XII.

IMPORTANCE OF BREAST FEEDING.

No food is so wholesome for the new-born as mother's milk. It is, therefore, the duty of every woman to nurse her child, if she is able to do so, that is, if her breasts and nipples are well developed and if the milk is sufficient in quantity and of proper quality.

Unfortunately, however, many mothers do not respond to this dictate of Nature. With the greatest regret we have to note that, in spite of all efforts of the government and of the medical profession, the number of those mothers who nurse their babies is steadily decreasing. Unfortunately, we say; for both mother and child have to suffer from this anomaly. As to the children, the truth of this assertion is forcibly demonstrated by the much greater mortality among infants fed by hand as compared with nursing infants. Mortuary statistics of larger cities, compiled with the greatest care and conscientiousness, have proved that of 100 breast-fed babies, as an average, ten to fifteen die; that of 100 hand-fed babies fifty die in the first two years of life. The difference is appalling. Three out of every four artificially fed infants who are now doomed to perish could be saved, if fate would allow them to partake of the blessings of mother's milk.

May this saddening fact serve as an impressive object lesson and solemn warning to such mothers as might otherwise neglect or seek to avoid this first and most sacred of maternal duties.

Not only the child, as stated, but also the mother is greatly benefited by the process of nursing. The irritation of the nipple, caused by the sucking of the child, promotes contractions of the womb, felt by every mother and commonly known as afterpains.

These afterpains are of incalculable value to the future well-being of the mother. The diminution of the womb, which is left in an enormously enlarged condition after the expulsion of the child, is their work. In the absence of this irritation through failure to nurse, it often happens that the womb does not contract and shrink sufficiently but remains in a state of chronic enlargement. A train of ailments peculiar to women is the consequence: bearing down feelings, pains in the sides, pains in the back, pains in the legs, pains between the shoulder blades, disturbances of the monthly period, nervous troubles of all varieties, etc., etc. In this connection it may also be mentioned that displacements of the womb are found twice as often with women who did not nurse their babies as with those who did nurse them.

If, therefore, mothers do not care to nurse their children for the children's sake, let us urge them to do it for their own sake. Much pain and misery can and will be avoided; many advantages will be won if Nature is allowed to have her proper and regular course as to the feeding of infants.

There are, however, numerous conditions and circumstances that may prevent a mother from nursing her child, even if she desires to do so. Among such may be enumerated:

INSUFFICIENT DEVELOPMENT OF THE BREASTS AND NIPPLES.

Some mothers, owing to an insufficient development of the mammary glands, are unable to furnish any nourishment to the child. With others the milk, flowing sparingly at first, fails altogether in a few weeks or months.

If this anomaly is known from previous experience, sometimes it may be improved upon by a daily, vigorous massage of the breasts during the latter part of pregnancy. If, however, this defect does not

become apparent until after the birth of the child, there is no present remedy and the mother is perforce compelled to submit to the inevitable—to feed her child by hand.

In other instances it happens that, although the breasts are full of milk, the mother cannot nurse, because the nipples are buried so deeply that the child can not get a proper hold.

This defect also must be remedied during pregnancy. It is easy to do. All that is necessary is to seize the nipples with the tips of the fingers and draw them sharply outward several times a day. Before long the nipples, heretofore deeply buried, become



Figure 33. Nipple Shield.

gradually more prominent and will be found in a normal condition and easily accessible at the time the child is born.

Confining pressure of wearing apparel, such as corsets, etc., which is generally considered the cause of the anomaly, will interfere with the success of the treatment, if allowed to continue. It is, therefore, indispensable to relieve this pressure. To this end the clothing should be loosened and the nipples surrounded by a ring of soft rubber, or cloth, or felt, similar to that used for corns, fastened with a strip of adhesive plaster.

If these efforts, faithfully made, fail to produce the desired result, the mother should not give up in despair and abandon her intention of nursing the child. The feeding through a shield, such as is shown in Fig. 33, will adjust the difficulty. Thus the rem-

edy is easily provided without depriving the child of the blessings of mother's milk, which Nature seemed to be inclined to withhold.

SORE NIPPLES.

The repeated and long continued moistening of the nipples by the lips of the child is followed by a loosening and shedding of the upper layers (Fig. 34 b) of the skin and a partial exposure of the lower tender layers (Fig. 34 a). This process of disso-

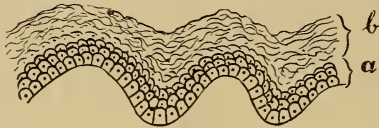


Figure 34. Section of the skin as seen under microscope. (a) lower, tender layers. (b) outer, horny layer.

lution advances, under normal circumstances, no further than that Nature, if proper care is taken, is able to restore the diminished resisting power of the nipples between the nursings sufficiently to prevent bad consequences. If, however, abnormal conditions prevail, as for example, if the skin of the nipples is thin and vulnerable, or if the nipples are so small and drawn in that the child is forced to pinch and to bite them in order to maintain its hold, small tears and cracks are unavoidable. Similar lesions on other parts of the body that can be kept clean and undisturbed are generally of slight consequence and heal rapidly, but on the nipple they may become very serious. The reason is twofold: First, the process of nursing, repeated at regular intervals, irritates the sore and keeps it open; second, the danger of infection is great, since the mouth of a child, be it apparently ever so clean, is a breeding place for countless germs, which, should they find lodgment in the laceration of the skin, will produce an inflammation of more or less serious nature.

The conclusion follows that the liability to disease is proportionately greater where the nipple is tender and where it is less accessible to the child. An extra amount of caution is, therefore, necessary under such circumstances.

The first indication of a diseased condition of the nipples is the pain felt during nursing. At such time the lesion of the nipple, which later results in ulceration, may be so slight as to be as yet imperceptible to the naked eye. It is, therefore, usually not minded. The mother thinks that she is making a laudable sacrifice in continuing the nursing in spite of the pain. This is a mistake. The pain is a warning which should be heeded. If this is not done, there become visible gradually distinct reddish or yellowish looking sores which group in a halfmoon formation around the base of the nipple. They bleed freely during nursing and often discharge a mattery fluid. But, even in spite of these, many mothers continue nursing and do not think it time to attend to the matter until the pain becomes unbearable or fever develops.

In the light of the facts given in the following pages and considering the danger, pain, and suffering which may arise from a lesion so easily treated and removed in its initial stages, we must say that this practice is inexcusable and should be discouraged as much as possible.

Prevention—Prevention is easy. Above all, the nipple should be hardened and its skin vitalized. This can be done by bathing the nipple every morning and evening with brandy or a mixture of alcohol and water equal parts, using a soft, clean cloth or, better, absorbent cotton for the purpose. The treatment should be applied during the last two or three months of pregnancy and thereafter continued after each nursing.

All wearing apparel which may cause pressure on

the breast should be avoided and depressed nipples be treated according to the instructions given on page 105. The nipple should never be allowed to come in touch with the daily clothing. A soft, freshly washed rag, which is frequently to be changed, must cover the breast and keep it from coming in contact with the dressing.

If the skin is dry and brittle and cracks easily, a thin coat of Hydrous Wool-Fat (Prescription 37), applied once or twice a day or after each nursing, will make it soft and pliable.

Prescription 37.

Hydrous Wool Fat1 ounce

Treatment—Any pain arising during nursing calls for immediate attention, even though no sore may as yet be visible to the naked eye. The first thing to do is to employ a nipple-shield (Fig. 33 on page 105) and to continue its use until the nipple is perfectly healed. This preventive measure avoids the contamination of the nipple and of the sore, should one develop, by the lips of the child, a very essential thing in order to avoid infection.

By this precaution the very first stages of the sore often heal without any further treatment than the regular care as outlined above. If they do not, or if a visible ulcer has developed, the nipple should be bathed after each nursing with a solution of Boric Acid (Prescription 38), dried gently with absorbent

Prescription 38.

Boric Acid3 ounces

cotton, spread with one of the following ointments, covered first with surgical gauze or a piece of clean linen and then with absorbent cotton and bandaged (see Fig. 35).

The ointment best to be used is given in Prescription 39.

Prescription 39.

Zinc Peroxide $\frac{3}{4}$ drachm
Petrolatum1 ounce

If this cannot be procured, one of the two others may be employed (Prescriptions 40 and 41).

Prescription 40.

Boric Acid $\frac{3}{4}$ drachm
Petrolatum.
Hydrous Wool-Fat, each..... $\frac{1}{2}$ ounce

Prescription 41.

Resorcin $\frac{1}{2}$ ounce
Petrolatum.
Hydrous Wool-Fat, each..... $\frac{1}{2}$ drachm

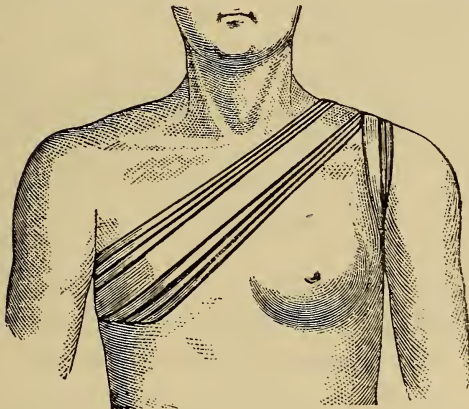


Figure 35. Bandaging of Breast.

Before nursing the remainder of the ointment must be removed with dry absorbent cotton.

If the nipple is reddened and inflamed, applications with the following solution (Prescription 42), to

Prescription 42.

Solution of Lead Subacetate4 ounces

be made three to four times a day for one-half to three-quarters of an hour, are very beneficial. Proceed as follows: Mix from one-half to one ounce of the medicine with a pint of water which has been boiled and cooled again. Then take a piece of linen, fold it over several times, dip it into the solution, press it out

slightly and apply to the sore, changing every five to ten minutes.

If, in spite of this treatment, recovery is retarded or no progress is made, the child must be removed from the affected breast, when the rest thus given, will bring about a speedy cure in most instances.

If, by neglect, the ulceration becomes chronic and shows no tendency to heal, the ointment given in Prescription 43 is very effective.

Prescription 43.

Silver Nitrate	2½ grains
Balsam of Peru	¼ drachm
Hydrous Wood Fat	
Petrolatum, each	½ ounce

Only in rare and very obstinate cases is the stimulating effect of this ointment not sufficient. An application of pure, undiluted Balsam of Peru (Prescription 44), repeated once a day as long as neces-

Prescription 44.

Balsam of Peru	1-3 ounce
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sary, will then start the healing. If this is done, the ointment given in Prescription 43 can finish the rest.

INFLAMMATION OF THE BREAST.

Much more serious than the ulceration of the nipple is the inflammation of the breast, which finds its inception almost invariably in these very ulcerations. This is because the latter serve in the majority of cases as a portal of entry for the disease germs, which are the actual producers of the trouble. In very rare instances the micro-organisms find their way into the interior of the breast through the outlets of the milk producing glands.

As soon as disease germs have settled in the breast, their pernicious work begins and inflammation follows. A hard and painful lump develops. At once the danger of an abscess is very near. If no corrective is employed, the lump increases in size and intergrows gradually with the outer skin, which becomes

reddened in appearance. The movements of the arm grow painful. The glands in the armpits swell and may be felt as little, round, sore, movable knots. Red streaks on the skin lead from the breast to the armpit, indicating the road on which the poison, from the original seat of the infection, is progressing to invade the general circulation of the blood. In the same direction shoots the pain. Fever prevails. In many instances it is ushered in with a chill and often rises up to 104 or 105 degrees Fahrenheit. The pain is severe and the suffering great.

The lump, which was hard so far and has increased to a considerable size in the meantime, begins now to soften in the center. An abscess forms. The adjacent skin inflames still more, bulges and finally breaks, discharging freely a thick, greenish-yellow matter. This brings relief. The fever lessens, the pains diminish and the breast begins to heal.

Prevention—The means of prevention are self-evident inasmuch as this painful and oftentimes dangerous inflammation of the breast almost invariably has its origin in sores of the nipple, however small they may be or however innocent they may look. Whatever tends to prevent these sores (see previous chapter), serves, therefore, also to prevent the inflammation. If, at the same time, fissures, should they develop, are treated early and properly, and if the mouth of the child is kept scrupulously clean, a safe protection is afforded and no mother need fear the dreaded malady.

To further increase the safety of the mother it is urged to handle also the healthy nipples with clean fingers only, since, perchance, microbes, under favorable circumstances, may find their way to the interior of the breast through the outlets of the milk producing glands, as stated above. For the same reason, all wearing apparel, coming in contact with the nipples, must be absolutely clean and harbor no disease germs.

It is an evil habit of mothers of the lower walks of life to simply slip the breast back into the corset after nursing the baby without any precaution whatever. This habit is to be condemned. The least that can be expected is that a clean, freshly boiled flannel cloth is steadily interposed between breast and shirt as a protection for the nipple.

The old view, held by the laity, that inflammations of the breast are caused by catching cold, stagnation of milk, etc., is not correct, as shown in the foregoing. With these foul excuses negligent attendants try to shirk responsibility and to place the blame upon the innocent mother. No sufferer should be satisfied with such an explanation. If she will look for the cause of the trouble, she will find it and can place the responsibility where it belongs. Not until we know and understand the workings, is an intelligent prevention possible.

Treatment—The treatment varies with the stage of the disease. If suppuration has not yet set in and the earlier stage has to be dealt with, that is, the hard and painful lump, every effort should be bent towards preventing such suppuration. If we succeed, the inflammation will subside in a much shorter time and much misery will be averted. To this end ice is to be employed in the following manner: The stricken mother lies down, lays upon the breast a cloth dipped in cold water and pressed out tightly, places upon this an ice-bag, such as can be bought at any drug store, filled with finely crushed ice and tightly closed that no water can escape. Close attention should be paid that the ice cools but the diseased spot, the surrounding parts being protected by a flannel cloth, laid around the seat of the inflammation. If the ice is too cold, there should be interposed between the skin and the ice-bag two, three or four layers of wet linen instead of one. The more layers, the less the cold is felt, but the less also the efficiency and the

curative effect of the ice-bag. It is, therefore, necessary to allow the ice to work as strong as can be borne. Never, however, should an ice-bag made of uncovered rubber, be placed upon the bare body, since it may freeze the skin; nor should it ever be placed upon a dry cloth. A dry cloth does not permit the cold to penetrate and renders the whole procedure useless.

The best results are achieved if the skin under the bag is just as cold as ice to the touch. If it is not, the ice works insufficiently and the fault must be remedied. A control is, therefore, necessary, and should be had by feeling from time to time of the skin of the breast.

This treatment with ice is extremely beneficial in all those cases which are taken care of at the very beginning before any suppuration has started. The pain ceases, the inflammation subsides, the fever lessens and disappears and the lump dissolves without turning into an abscess.

As soon as matter has formed, be it ever so little, the ice is not well borne. If applied, the pain increases. The case now calls for hot applications instead of cold. Hot linseed poultices are best to be used and should be renewed night and day as soon as they begin to cool. Linseed poultices hasten the process of ripening and the formation of the abscess in the same degree as the ice delays it.

As to the choice of the application, if cold or hot, the following general outline may serve as a guide. Cold should first be tried in all cases which are in the initial stages, since, if efficient, it cuts short the disease and saves an operation and much suffering. Hot applications are to be employed if the ice increases the pain, or if the softening of the lump has already begun.

For those mothers who cannot lie down, a third way of treating an inflammation of the breast may be

mentioned. This is the treatment with an alcohol bandage. It allows the mother to be up and has the further advantage of assuring an effective result under all circumstances. It will prevent suppuration, if preventable, and if not, it will hasten it and quickly ripen the abscess.

The alcohol bandage is made in the following manner: A piece of absorbent cotton, large enough to cover the breast, is moistened with alcohol, placed upon the breast and covered with a piece of oil-cloth or oil-silk which must over-reach the cotton to all sides to the extent of the width of four to five fingers. Thus the alcohol, contained in the cotton, cannot evaporate and is forced to penetrate, a point which is of the utmost importance. The dressing is fastened with a bandage in the way as shown in Fig. 35 on page 109, that is, the right breast over the left shoulder and the left breast over the right shoulder. If properly applied, it will help considerably to ease the pain. It should lift the breast as high as possible without pressing upon the swelling as sagging increases the suffering. Instead of a bandage a towel or a bedsheet may profitably be used.

The pain starts anew when the cotton begins to dry. This is a sign that it must be moistened again. If the alcohol causes a burning sensation of the skin, as it sometimes does, it is well to dilute it somewhat with water, or to cut a few little holes in the oil-cloth so as to give the air a chance to withdraw some of the fluid. Then the burning ceases.

Although the alcohol bandage proves most beneficial in many instances, it sometimes becomes unbearable after a few applications which helped very nicely. This happens especially when the ripening of the abscess has begun. The substitution of hot linseed poultices is indicated under such circumstances.

What should be done in a given instance has to be decided from case to case. Enough has been

said to enable the mother to use proper judgment. If she finds that she was mistaken, she must change. No harm is done. The pain should be her guide. What hurts the least, is best adapted.

When suppuration has progressed to the point where the swelling has sufficiently softened, the abscess should be lanced. To wait until it breaks and discharges of its own accord, a too common occurrence, is dangerous and ill advised. The destruction of the tissue in the interior of the breast becomes too extensive and pain and fever are unnecessarily prolonged. The lancing of the abscess clears away all annoyances in the shortest possible time and hastens the cure considerably.

If the abscess is open, its cavity must be thoroughly rinsed once a day with a solution of Rhen-

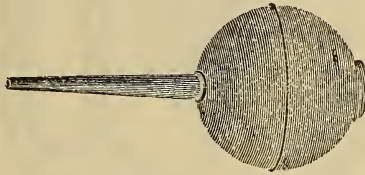


Figure 36. Ear and Ulcer Syringe.

lin, a very recommendable, effectice, and non-poisonous disinfectant (Prescription 45), in the strength of

Prescription 45.

Rhenolin 4 ounces

one teaspoonful to a pint of boiled water, the solution to be used as hot as possible. The instrument employed for the purpose is either a small rubber bulb, as shown in Fig. 36, or, better, an ordinary fountain syringe, preferably with a glass nozzle (Fig. 37). This instrument must be kept scrupulously clean. Its nozzle should be boiled every day or at least every second day and be kept wrapped in a clean towel, when not in use. If Rhenolin cannot be procured in time, Boric Acid may be substituted (Prescription 46), prepared in the manner as described on page 6,

Prescription 46.

Boric Acid 3 ounces

or a solution of Corrosive Sublimate. To prepare this latter medicine, dissolve one of the following tablets (Prescription 47) in a quart of freshly boiled water.

Prescription 47.

Corrosive Mercuric Chloride 7 1-3 grains

Sodium Chloride 7 2-3 grains

We emphatically warn against Carbolic Acid, although it has been and is still used extensively. A weak solution of it is perfectly ineffective, a strong solution is efficient but highly poisonous.

The breast should be supported continually dur-

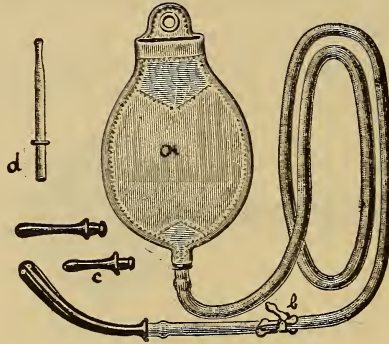


Figure 37. Fountain Syringe. (a) rubber bag. (b) stop cock. (c) end piece for rectum. (d) end piece made of glass.

ing the entire treatment by a bandage in the way before suggested.

As in all other infectious diseases so also in the case of an inflammation of the breast, there circulate millions upon millions of harmful microbes with the flowing blood through the entire system, undermining its resisting power and making disturbances and annoyances of the most varied kind. The local treatment, of course, is powerless against these tiny miscreants. In order to reach them a disinfection of the entire blood must be effected. This can be done with Silver Crede. The remedy is perfectly harmless to the human organism but very hostile and

deadly to the disease germs. The results, obtained therewith in the hands of the writer, are so remarkable that he does not hesitate to pronounce it one of the most important, yes, an indispensable remedy in the treatment of the ailment in question.

The form in which Silver Crede is generally and best used, is that of an ointment. This is called "Unguentum Crede," according to its inventor, Dr. Crede, a German physician. The ointment is

Prescription 48.

Unguentum Crede½ ounce
divided into five doses

black. It must be rubbed into the skin and is supposed to go through the pores into the blood. The black color, the greasy consistency, the besmearing of the body and the work of the rubbing, are inconveniences, we admit, but are insignificant as compared with the splendid results achieved by this remedy in times of danger and distress.

One of the packages, prescribed in the foregoing prescription, is used at each rubbing and massaged into the skin for twenty to twenty-five minutes. Immediately after the application the place of the inunction is black as coal. It lightens, however, in the course of the next few days as the remedy is absorbed gradually into the blood. In order to facilitate this absorption and not to overload the already filled pores, a different place is chosen for every rubbing until the entire body is covered.

The procedure is as follows: After a thorough bath with hot water and soap, in order to open the pores, the skin is allowed to dry for a few hours. Then the rubbing begins. It is done in the following order:

The first package is rubbed all over the entire back from the neck down to the end of the spine.

The second is rubbed all over the chest and the abdomen, avoiding only the afflicted breast.

The third is rubbed all over one leg from the groin down to the ankles, in front and behind

The fourth is rubbed all over the other leg in the same manner.

The fifth is rubbed all over both arms from the shoulder down to the wrist.

The rubbing must be done twice a day, morning and evening, in all dangerous cases in which a quick and energetic action is required. One a day, either in the morning or in the evening, is sufficient in all other cases.

One-half day after the last rubbing a bath is taken and the underwear is allowed to be changed, not before. Although the body looks like that of a negro and the underwear like that of a coalheaver, one must take these inconveniences into the bargain if such a precious thing as life and health is at stake.

After the bath, if necessary, the entire treatment must be repeated in the same succession. Gold rings on the fingers of the patient or on those who do the rubbing turn white and should be removed before the work begins.

As stated above, the ointment is perfectly harmless to mother and child. It is not to be confounded with the quicksilver ointment, which looks very much the same but is very poisonous.

A substitute for the ointment is a 1 per cent solution of Soluble Silver. It is, to be sure, less effective but also excellent in its results. One tablespoonful of this solution is taken three or four times a day at the most convenient time (Prescription 49).

Prescription 49.

Argentum Colloidale20 grains
Distilled Water4 ounces

The effect of the remedy is generally as follows: Even after the first rubbing the patient, who before was restless, in pains and misery, begins to get quiet, rests easier, feels better. After a few more doses the

fever declines, the hard and painful lump loses its tenderness and disappears, or the matter forms and breaks through quickly and with less pain. Instead of a protracted illness, the cure is speedy and recovery rapid.

The local treatment, of course, should not be neglected but be faithfully employed at the same time.

SICKNESS OF THE MOTHER.

Nursing is forbidden:

A. In cases of acute diseases of the mother accompanied by fever, such as typhoid fever, small pox, diphtheria, scarlet fever, pneumonia, etc., if they are very severe. If they are slight, the nursing need not be interrupted, but the child should be kept separated from the mother during the intervals in order to protect it against the disease.

B. In cases of serious chronic ailments, such as exhausting kidney-diseases, extreme anemia, serious heart trouble and, above all, consumption. Even a suspicion of, or a tendency to, consumption in the mother is sufficient to make nursing prohibitive, as the latter exercises a dangerous and deleterious influence upon the mother and exposes the child to the danger of infection.

On the other hand, a slight anemic condition is no reason why a mother should not nurse her child, as it can easily be remedied by the use of proper nourishment and medicines. If, however, this condition does not yield to treatment and the trouble increases; if the mother grows weaker, loses her appetite, suffers with continual headache, dizziness or sharp, darting pains in the breasts and in the back, and if she becomes subject to palpitation of the heart,—then, for the mother's sake, the baby must be weaned and artificial feeding resorted to.

C. In cases of chronic nervous troubles and affections of the mind, such as epilepsy, hysteria, insan-

ity, etc. Slight nervousness is no contra-indication for nursing.

For particulars as to the continuation or non-continuation of the nursing during the monthly period or an occasioned new pregnancy see the chapter on "Weaning."

CONDITIONS OF THE INFANT INTERFERING WITH NURSING.

New-born infants will occasionally refuse the breast. This is in most instances in consequence of an aggravated catarrhal condition of the mouth, which in a less pronounced degree is common to most new-born babies. In such cases the mucous membrane of the mouth is abnormally red and sensitive; the child will take the breast, but, owing to the pain, immediately quits. After repeated similar attempts, it finally ceases its efforts and cannot be induced to renew them again.

This condition need not cause alarm. The milk, pumped or massaged out of the breast, should be fed with a spoon until the inflammation has subsided, when nursing can be resumed. This will ordinarily take place in a week or ten days.

A further interference with nursing is sometimes caused by a clogging of the nose in consequence of a catarrh or a tumor of the nasal passages. In such instances breathing becomes difficult or impossible while nursing, since the inhaled and exhaled air has to take this route during that time. The infant's conduct is quite characteristic. It begins to nurse, draws two or three times and lets the breast go. After several deep breaths it starts again and so on, repeating its efforts until it becomes tired and by pitiable crying indicates its displeasure.

The treatment is simple in case of catarrh. A little cotton is wrapped around the end of a match or a toothpick, dipped into the following ointment (Prescription 50), introduced into the nostril and spread

Prescription 50.

Adrenalin Ointment (1:1000) one tube

as much as possible. In a few minutes the swelling subsides and the passage gets free. The same is done with the other nostril and the treatment repeated, if necessary, before each nursing. If too much of the ointment is taken, it may become poisonous. It is, therefore, advisable to use as little as possible for accomplishing the purpose.

At times certain malformations are the root of the evil. Among these are tongue-tie, harelip and cleft palate. They must be operated upon.

In a comparatively small number of cases no reason whatever can be discovered. The child simply will not nurse. It also sometimes happens that the child will take one breast with avidity and refuse the other with energy. Here also the cause may remain in doubt.

CHAPTER XIII.

MOTHER'S MODE OF LIFE AND REGULARITY OF HABITS.

As both the quantity and quality of the mother's milk are of the greatest importance to the well-being of the child and as they are more or less dependent upon the mode of life and the nourishment of the mother, a more intimate knowledge of these matters becomes imperative.

A mother, while nursing, should lead a simple and retired life. All exciting diversions, such as the theater, concerts, balls, etc., as well as undue social activity in general had better be avoided. Unusual exhilaration, keen disappointment, great fear or sudden fright, all exercise a decidedly unwholesome influence upon the mother's milk. Many cases are on record where a sudden strong emotion of the mother so changed her milk that serious illness of the child resulted in consequence.

In addition to mental peace and quietude, bodily rest and comfort, if it can be obtained, should also be provided for. A plentiful rest, at night especially, is of the highest importance. The sleep of the mother as well as that of the child should, therefore, be disturbed as little as possible.

However, though mental and physical rest is highly recommended, it is not meant by any means that wholesome exercise in the open air should be abandoned. On the contrary, it should be encouraged. The care of the child will of necessity tie the mother more than usually to her house and the daily walk is likely to be neglected. This must not be done. A walk should be regularly taken in winter as well as in summer so long as the weather will permit

it. This is essential for the aeration of the blood and the proper performance of the intestinal functions. It is the excessive or violent exercise that is to be discouraged.

A regular, daily, substantial movement of the bowels is of prime importance to nursing women. If the mother is costive, the child is thereby affected. The abnormal, morbid condition is often transmitted to the latter and lays the foundation of a tendency to indigestion, which may adhere to the offspring throughout its entire life.

In case of existing costiveness natural means such as exercise in the open air, proper food, etc., and even enemas are far better than drugs for nursing mothers. For special information as to this point we refer to a later chapter on "Constipation," which may be taken as a guide for the mother as well as for the child.

NOURISHMENT FOR NURSING MOTHERS.

A. What a nursing mother shall partake of: It is only during the first two or three days after the birth of the child that the mother should be confined to the more restricted diet of milk, boiled eggs, gruels of rice or oatmeal or barley, chicken or other meat-soups, toast, bread and butter and cooked fruit. After the third day the diet can be more liberal and fowl, fish, veal, etc., be included.

As soon as the mother has left the bed her former ordinary diet should be resumed. Substantial changes are not desirable. As proof hereof may be cited the cases of such wet-nurses as may have been called to the city from the country and who sometimes, as the result of the novel surroundings and entire change of diet, suddenly lose their milk, but at once regain it when returned to their rural home and plain diet.

The ordinary mixed diet furnishes the best and the greatest quantity of milk. Easily digested meat of all kinds, fish and fowl included, furthermore eggs,

bread and butter, honey, milk, buttermilk, potatoes, farinaceous foods, puddings, gruels of rice, barley, flour or oatmeal, etc., pea and bean-soups, cooked fruit, all breakfast foods, the fresher and softer kinds of cheese, etc.,—all produce a milk that is good and wholesome to the child. As a general outline it deserves emphasis, however, that a meat diet will produce a thicker and more substantial milk, while a preponderance of vegetables in the diet will render the milk proportionately thinner and more watery.

The best beverage is fresh, pure water. Coffee and tea in limited quantities are also permissible but should preferably be taken with a large admixture of milk. Beer and wine had better be avoided. The less alcoholic drinks are indulged in, the better it is. If something must be taken, extract of malt, as made in breweries, is preferable. It contains the smallest amount of alcohol, is richest in nourishment, stimulates the appetite, and acts as a gentle laxative. The particular brand is a matter of individual choice, as they are all made along similar lines. Every mother may, therefore, select one according to her own taste.

Tonics: The efforts during confinement, the great loss of blood during this period, and the loss of vital force caused by the nursing, tax the mother above the normal limit. What wonder, therefore, that it is a frequent question, heard from mothers: "What shall I take to build me up again and give me strength? Which is the best tonic?" In answer we must state that a good and relished food and a plentiful amount of pure, fresh air are the best reconstructives.

But in many cases the blood is poor in iron and the regeneration of the loss and the formation of new, pure, and healthy blood is very slow without an adequate supply of properly prepared iron, especially if the appetite is wanting. A good, reliable tonic will, therefore, prove welcome in many instances. In order, however, to answer its purpose it must fulfil cer-

tain requirements. It must contain all those elements which are necessary for the formation of new blood; it must stimulate the appetite and the digestion and must, above all, contain no ingredients which, like alcohol, are injurious to the child, since they may, as we shall see later, go over into the milk and injure the baby.

Only a very few preparations do, in fact, fulfill these requirements. Far the most remedies, which are recommended for nursing mothers and are offered to the public through the medium of the daily press, are either worthless or detrimental. They contain, in the majority of instances, no such ingredients as are required for the formation of blood but instead great quantities of alcohol and are stimulants or drinks rather than tonics.

Of the few that are recommendable Iro-Tonic (Prescription 51) is the best. It contains iron in

Prescription 51.

Iro-Tonic16 ounces

abundance and in easily digestible form, will not corrode the teeth, is very nourishing, an excellent appetizer and entirely free from alcohol. These properties make Iro-Tonic an ideal tonic for debilitated women, no matter whether the weakness is caused by the confinement or by exhausting diseases. These same properties make it also the best tonic in all debilitated conditions of children. It builds up and reconstructs wherever new tissue is needed or wasted substances must be replaced. It is absolutely non-injurious and can, without hesitation, be given to the youngest infant. The writer has used it for many years with the most gratifying results both for women and children.

For the greater convenience in handling and taking, Iro-Tonic Tablets (Prescription 52) have been

Prescription 52.

Iro-Tonic TabletsNo. 150

prepared. They are equally effective and should be

preferred in all cases except for small children and for those older children and adults who cannot swallow pills.

Wine is no reconstructive. It contains no nourishment but plenty of alcohol. It is more of a stimulant and not to be recommended under ordinary circumstances.

Kephir, however, is an excellent reconstructive and deserves the highest recommendations. More about it can be found in one of the later chapters.

B. What a nursing mother shall not partake of: All beverages containing larger proportions of alcohol, such as whisky, brandy, gin, etc., should be avoided. The alcohol passes over into the milk and injures the child. All sharp as well as highly seasoned or salted eatables such as game, oysters, crabs or other shellfish, salted or pickled herring, as also onions, garlic, radishes, etc., are likewise objectionable. They give the milk a pungent and disagreeable taste.

The mother should be particularly careful in the use of drugs and medicines as many of them pass over into the milk and may prove harmful to the baby. Among these may be mentioned: All volatile oils, such as anise oil, wintergreen oil, spirit of camphor, as well as turpentine, castor oil, quinine, potassium iodide, strychnine, antipyrine, chloral hydrate, morphine, opium, belladonna and many others. For example, turpentine may give the mother's milk such a sweetish taste that the child will often refuse it. Castor oil thus acts on the child and produces diarrhea. And yet castor oil is better for nursing mothers than Rochelle, Glauber or Epsom Salt.

Most dangerous is the use of morphine, opium and other narcotics and soporifics. Even if taken by mothers in moderate doses, the drug is frequently transmitted through the milk to the child in such quantities as to render it costive, sleepy, soggy and almost intoxicated.

It follows that nursing mothers should exercise more than ordinary care in what they partake of and should particularly avoid patent medicines of doubtful nature, almost all of which contain the very elements of danger to which reference has been made.

CHAPTER XIV.

NORMAL FUNCTION OF THE BREAST.

Before we enter upon the description of the disturbances in the function of the breast it will be necessary to first get acquainted with the normal conditions.

Already in the second half of pregnancy the breasts begin to swell. They become harder and slightly painful. On strong pressure there exudes from them a little watery fluid. This status remains until after birth, when within a few hours the secretion begins to increase. The increase continues gradually. Already in the second day the milk can be pressed out in a stream. Not, however, until the third or fourth day the milk "shoots in," that is, comes in in larger quantities. Then the breasts heretofore soft and flabby, become hard, their base lumpy. The secretion grows abundant. But even at this time the fluid, coming from the breast, has not as yet assumed the nature of the finished product. On close inspection one can see that it does not look uniform and glaringly white as normal milk but more watery and uneven. So the milk remains until the child, by its repeated and vigorous sucking, brings the breast to its full secretive power, which generally occurs between the eighth and fourteenth day. When this is done, the milk flows in abundance and is of normal, uniform quality.

The co-operation of the child is, as we see from the foregoing, indispensable in order to prepare the breasts for nursing, that is, the irritation of the nipple by the energetic and vigorous sucking of a hungry baby is of prime importance for the development of the breast. If, therefore, the child is weak, or if the nipples are drawn in, or if there exists any other rea-

son which hinders a vigorous sucking, the milk producing glands will not develop sufficiently. The consequence is an insufficient milk supply. This explains the following seemingly curious phenomenon which sometimes can be observed. Mothers, who did not seem to have sufficient milk for their own emaciated, puny little babies, produce in a short time an abundance of milk after vigorously sucking children of other mothers were regularly laid to their breasts, and this in spite of the fact that their diet and mode of living remained unchanged.

There is, besides the irritation of the nipple, another factor which has a great influence upon the quantity of milk secreted. This is the complete or incomplete emptying of the breast. If the breast is only partially relieved of its contents and the remaining milk becomes stagnant in the glands, the secretion of new milk is hindered, the secreting cells slacken in their activity and as a consequence the output is diminished; but if the breast is completely emptied, way is given for new milk, the glands are stimulated to higher activity and as a consequence the output is increased.

Both a vigorous sucking and a complete emptying are, therefore, indispensable to the full development of the breasts and should be aspired by every mother.

The foregoing discussion gives satisfactory proof that not always is the breast at fault, if the secretion of milk is insufficient. The cause for the trouble may also lie with the child. It is important to know this. The remedy to be applied under such circumstances will be given later.

INSUFFICIENT MILK SUPPLY.

It seldom happens that no milk can be obtained from the breasts. In such cases there exists an inherited defect, which cannot be remedied.

More frequently it occurs that the milk, abund-

ant at first, fails entirely in a few weeks or months, or that it is secreted in an insufficient quantity during the entire time of nursing.

The question now arises, how is a mother able to find out if the quantity of her milk is sufficient or insufficient for the baby? The answer is very easy. With the greatest accuracy it can be given by the mother herself without the counsel of a physician. It is done with the scale. On page 78 we have already pointed out the great importance of this instrument during the rearing of children. Here is one of the many occasions where it proves indispensable.

If a mother suspects that her milk is not sufficient for her offspring, she should weigh the child carefully before and after nursing. The difference in weight gives exactly the quantity of milk taken (see page 79). A comparison with the table given in the chapter "How Much Shall the Child Have at Every Meal?" which states how much a child of the age of her baby normally drinks, furnishes at once the desired information. If the baby has taken the quantity corresponding to its age and does so again during subsequent examinations, the mother may ease her mind as to this point. If, however, it received too little, the question will be whether the infant is too weak to empty the breast, or if the breast produces an insufficient amount of milk. An examination will decide. If after nursing the breast is completely empty, the child has done its duty and the breast is at fault. But if plenty of milk is left in the gland, the breast is all right and the child is to be blamed. Not until this decision has been made can the proper remedy be decided upon.

In examining the breast one is apt to make a serious mistake. It is not sufficient to squeeze a little around the nipple. This is not the place where the remnants of the milk are hidden. They are at the base of the breast. It is, therefore, necessary to

massage thoroughly the entire breast from the base to the nipple in order to arrive at a correct conclusion.

There are a number of symptoms in the mother and the child which lead a keen observer to suspect an insufficient milk supply, without the test given above. They will be enumerated here. It will serve to facilitate the detection of the troubles and prevent the mother from mistaking them for real ailments.

Indication of insufficient milk supply:

(a) In the mother: The breasts of the mother who is usually living in poverty or is enfeebled by grief, misery, or sickness are small and flabby. The glands are poorly developed. On pressure there exude only a few drops of thin, watery milk. Pains arise during nursing in the breast, the head, the back and between the shoulder blades. The stomach becomes disturbed.

(b) In the child: The child does not gain sufficiently in weight (see page 81). The usual fullness and plumpness of infants is lacking, the skin hangs loosely, the arms and legs are thin and the face is pale. The sleep is disturbed, the child cries a great deal and awakens after short naps, as the empty and gnawing stomach dispels the rest. The time of nursing is too long (see chapter "How Long Shall the Child Nurse?"). Its manners are characteristic. Under normal conditions the child swallows after sucking two to three times. If the supply is inadequate, it sucks five, six, seven and even up to eight times or more before it swallows. It is plainly evident that the child is doing its best in vain efforts. When it finally is exhausted and ceases to nurse, another drop cannot be pressed out.

In other instances the child will do just the opposite. It sucks vigorously at the breast a few times and then, evidently discouraged and aware that its efforts are in vain, will drop the nipple and can not be induced to take it again. Upon examination the

breast is found empty. Vomiting does not exist.

Treatment—The treatment must correspond to the cause of the trouble. If the diet of the mother is insufficient or faulty, or if her mode of life is too exciting, it must first be changed. Good, wholesome, and sufficient food, especially meat (see page 124), a quiet, regular mode of life, and plenty of undisturbed sleep (see page 122) are the first requisites for the production of a good and sufficient supply of milk. The amount of fluids and especially of milk is also of great importance. The more fluids (at least 2½ quarts are necessary) are taken, the more abundant the milk will flow. Light exercise in the open air is also essential.

If, notwithstanding the careful observation of the foregoing suggestions, the quantity of milk does not increase, this should not serve as an inducement to add at once artificial food. Such a mistake would tend to decrease the flow of milk still more (see page 128). On the contrary, the baby should be laid to the breast regularly but, in order to stimulate the gland to higher activity, be forced to suck more vigorously. This can easily be accomplished in most instances by allowing the child to grow real hungry. The more hungry the child is, the more forcefully will it tackle the breast. The more forcefully it tackles the breast, the stronger will be the irritation on the nipple and the more abundant the flow of milk, since there is no better stimulant for a sluggish breast than the vigorous sucking of the child. But can a child get hungry if it be put to the breast every hour or two or even oftener? No! Will it suck forcefully if the stomach is half filled? No! It will sip off what comes easily and let the rest remain in the breast. This adds to the first cause for the decrease in the production of milk a second one, namely, to the lack of irritation of the nipple comes the stagnation of milk in the milk producing glands (see page 128).

An attempt to remedy the fault should be made by putting the baby to the breast at longer intervals and by giving it only one breast at a time (see chapter: "Shall the Child Have One or Both Breasts at Each Nursing?"). Then there is left for it no other choice but to work strenuously to appease the stomach, giving thereby a stronger stimulus to the breast to do its duty.

If, in spite of this, the baby is unable to empty the breast, indicating that it is really too weak, it is necessary to relieve the stagnation of milk by massaging out all that the nursling left in the gland and feeding it with a spoon. The proceeding helps both. The baby gets what belongs to it and the breast is stimulated to higher production.

If the ration proves to be still too short, properly prepared cow's milk should be substituted for the wanting mother's milk. It is not permissible to give breast and cow's milk alternately for the reason above referred to.

The massage of the breast must be made in such a way that, while kneading and rubbing, the fingers gradually move from the base, that is, the periphery of the breast, towards the nipple. This should be continued until all the milk is thoroughly emptied. Also in those instances in which the production of milk is insufficient, although the nursling succeeds in emptying the breast fairly well, a massage performed two or three times a day for ten to fifteen minutes will be very beneficial, and, in most instances, be followed by an increase of production. A trial is, therefore, always desirable.

If circumstances allow, mothers may take a hint from the custom of physicians who work at clinics or practise in large cities where ample opportunity is offered. They put weakly babies to the well developed and abundantly secreting breasts of healthy wet-nurses and the forcefully sucking, vigorous child

of the wet-nurse to the insufficiently developed breast of the mother of the weak baby. In this way the latter profits doubly. Her child gets an abundant supply of wholesome milk and to her own breast is given the stimulus for a better development. By the time that her own child is strong enough to suck forcefully, the milk producing glands of her breasts are generally sufficiently developed to meet fully the requirements of the nursling.

There are also recommended a number of remedies, claimed to have a direct influence upon the secretive power of the mammary glands. They are not entirely reliable, but shall be enumerated for those mothers who want to try them.

The one is Somatose (Prescription 53). It comes in 1 ounce packages and is taken in doses of a teaspoonful three to four times a day, in milk or some other fluid.

Prescription 53.

Somatose1 ounce

The other is Lactogol (Prescription 54). It also comes in 1 ounce packages and is taken in the same dose and in the same way.

Prescription 54.

Lactogol1 ounce

Both preparations are made in Germany. The latter is prepared from linseed meal. A soup made of this meal will do the same as the expensive proprietary article but is not as tasteful. No harm can be done with either preparation. A trial is advised if the mother can afford the price.

Not long ago an Italian physician praised highly anise seed for the same purpose. He advised several women to make an infusion by pouring one quart of boiling water over one ounce of the seeds and to drink a part of it, using the rest for external applications upon the breasts. Both had sufficient milk in five days. They had taken internally five quarts and used

two quarts for the applications. On the sixth day they discontinued the medicine but the supply of milk remained sufficient.

More confidence than in the foregoing preparations can be placed in those remedies which serve to cure morbid conditions of the body. They help in many cases considerably by removing existing diseases, such as watery blood, dyspepsia, etc. Especially those remedies which tend to increase the appetite and stimulate the formation of blood often bring about very happy results. Care, however, must be taken to avoid such drugs as might go over into the milk and harm the baby (see pages 124 and 126).

EXCESSIVE MILK SECRETION.

It is also detrimental if the breast produces more milk than the child requires. Only in rare instances is the mother harmed thereby, very often, however, the child.

Signs of a superabundance of milk supply:

On the mother: The breasts of the mother, who generally is healthy and lives in plenty and particularly on meats, are well developed and at the time of nursing full and tense, even hard to painfulness. Upon slight pressure they discharge several strong streams of milk. Plenty of milk is left after the child is satisfied.

Though ordinarily the condition described is of no serious consequence to women, there are instances in which the excessive production becomes injurious to the mother. This happens in such cases in which the flow can no longer be controlled. The milk trickles constantly from the large, heavy, and overloaded breasts. The clothing gets wet and disposes to colds. The excessive secretions gradually undermine the health of the mother. She loses her appetite, gets drawing pains in the back, grows weak, faint, nervous and emaciated, and may even become seriously ill, if

the excessive production of milk is not controlled in time.

On the child: It swallows after every draught and is quickly satisfied. When the meal is finished, an examination shows that the supply is by no means exhausted. Notwithstanding the abundance of milk, the nursling does not thrive. It often vomits. It is inclined to accumulation of gas in the bowels, costiveness and colic. Instead of falling into a deep and peaceful slumber after nursing, as a healthy child will do, it is restless and uneasy during sleep.

The disturbances are caused partly by too great a quantity of nourishment, partly, however, by too hasty a filling up of the stomach. This latter is done without exertion and, in consequence, not followed, as it should be, by fatigue. For it often happens that the milk comes so easily and quickly out of the breast that the nursling gets hardly time to swallow (see chapter on "Nursing Bottles and Nipples"). Under these circumstances there befalls the baby what befalls the adult if he eats too hastily and bolts down his food—disturbances of nutrition.

Of course, Nature helps out for a while by the vomiting above referred to, giving up what is "too much."

How long a child can stand the continuous overloading of the stomach depends upon its power of resistance and recuperation. Some can stand it all the time; most, however, grow ill sooner or later in spite of the provisions for ready and convenient relief, if no redress is offered. The burden gradually becomes too great for Nature. Indigestion begins. The character of the vomiting changes. The simple regurgitation of food develops into a morbid vomiting. The difference is easily detected. In the first instance, the child throws up a part of the contents of its stomach soon after nursing, apparently without

effort, remains cheerful and contented and has regular and well digested stools. The ejected milk is curdled but little, if at all. In the second instance, however, the vomiting does not occur until one to one and one-half hours after nursing. The child is restless, distorts the face and cries. The ejected milk has a strong, sour smell, is curdled and in lumps and often mixed with mucous. The stools become irregular. They begin to smell and show undigested particles.

These are the first signs of indigestion. Worse ones will soon follow if the warning, thus given, is not heeded.

Treatment: The mother should, first of all, take as little fluid as possible and decrease the total amount of nourishment. A vegetable diet is preferable to a meat diet. The use of beer, wine, or extract of malt is forbidden. The bowels must be kept so loose that two to three passages a day result.

Such dieting, coupled with plenty of exercise in the open air, long walks or drives or light gymnastics, where practicable, will usually suffice to reduce the amount of milk to a normal quantity.

In order to relieve the distressing tension it is best to bandage the breasts up in the same manner as described on page 114. Then the pain will soon diminish. Pumping out should not be practised except in cases of urgent necessity for reasons explained on previous pages.

In order to guard the child against harm while the mother is undergoing the treatment, it is necessary to shorten, as a precautionary measure, the time of nursing. How short this time should be in a given case depends upon conditions. It should be so short that vomiting ceases. As an additional measure, a reduction in the frequency of nursing is also required.

The milk coming first is, however, less nourishing than that coming later (see next chapter on "Faulty Composition of the Milk"). The digestive

disturbances of the child must often, in part at least, be attributed to this cause. It is, therefore, sometimes necessary to pump the first milk out and leave about enough in the breast to satisfy the child. Threefold are the advantages for the baby: It gets the more creamy part of the milk, swallows more slowly, and is forced to exert itself sufficiently to fall into the necessary healthy slumber after nursing (compare here the chapter on "Nursing Bottles and Nipples"). This procedure, of course, is detrimental to the mother, since the breasts are thereby stimulated to a still higher activity. For this reason it should not be chosen except the condition of the child demands this sacrifice on the part of the mother, and it does not seriously interfere with the latter's health.

In those rare instances only in which the milk is constantly trickling from the breasts, may this method of treatment be not sufficiently effective. In such cases the mother should wean the child as soon as she observes that her strength is failing. The breasts should be covered with belladonna plasters, provided with a hole for the nipples, and fastened tightly upward in the manner described above. The result is speedy. In a short time the breasts are dry, to the great relief of the mother.

FAULTY COMPOSITION OF THE MILK.

Although the weighing of the child furnishes very valuable information in regard to its feeding, the data gathered therefrom may lead to serious mistakes, if additional circumstances are left out of consideration. If, for instance, a nursling does not thrive and is troubled with indigestion, although the scale shows that the quantity of nourishment is right at every meal, we must not jump at the conclusion that the composition of the milk is at fault. There are other circumstances which may lead to the same disturbance, although the quality and quantity of the food correspond to the normal. To these belong

hasty swallowing, insufficient exertion during nursing (see chapter on "Nursing Bottles and Nipples"), untimely nursing, too frequent nursing, bad hygienic surroundings, want of fresh air, etc.

The composition of the milk becomes unsuited by the fault of the mother rather than that of Nature if the child is allowed to enjoy both breasts at each nursing. This is a bad habit and should be abandoned. An exception must be made if the first breast does, in fact, not give sufficient milk and is completely emptied when the child stops nursing it. We have touched upon this point already on one of the foregoing pages, but will here dwell upon it somewhat longer, since we consider it important that mothers should know about these things.

Exact investigations have disclosed the fact, and everyone who ever milked a cow knows, that there exists a great difference in the composition of the milk according to the time it is taken, that is, if it is taken at the beginning or at the end of the milking. The difference is so great that the percentage of fat is in the last portion of the milk about three times as large as in the first portion. The same holds true with the mother. It is, therefore, evident that the nursling, for whom Nature intended the entire contents of the breast, will receive a nourishment unsuited to its digestive organs if it gets the first halves of both breasts. It is also evident that as a consequence disturbances of nutrition may spring into existence in spite of the fact that the scales show a correct quantity of food taken at each meal and in spite of the fact that Nature had prepared the proper nourishment. Under such circumstances the trouble does not lie with a faulty function of the breast, but with an improper management of it.

Of course, it suits the baby eminently well to receive both breasts at each meal. It does not know as yet what is good for it and what not. It makes

the same mistake which is made by many adults—the easier it fills its stomach, the better it likes it. And it is certainly easier to sip off the first portions of both breasts than, in order to appease the appetite, to empty under exertion one breast to the last drop. If, however, such a bad habit has been established once, it is difficult to discard it. Mothers are too readily induced by the crying of their darlings to relapse into the old error.

If a nursling, therefore, gives up one breast in order to continue on the other, the mother should examine the first one carefully (see pages 130 and 133) and see if it is completely emptied. If it is not, she should not give the second breast, but offer the first one again and let the child go hungry if it refuses to retake it (as to weak children see page 133). The next time it knows better and will hesitate to drop the nipple so long as there is something to be gotten out of it. For hunger hurts. It helps better than all persuasion and admonition to force the spoiled darling into submission.

If all the possible faults above referred to have been considered and those found been removed; if, in spite of all efforts to do what is correct, the child does not thrive though the scales show that the quantity of nourishment is sufficient—then and not until then is it proper to assume that the quality of the milk does not meet the requirements of the child, provided that not one of the chronic diseases of childhood prevails (see chapter on “English Disease”). What the fault consists of has not been told. Careful deliberation is needed to find this out. It should be investigated if the mother’s mode of life and her diet is right, if her state of health is satisfactory or needs to be improved, if her bowels move properly, if she takes medicine which goes over into the milk and harms the child, etc., etc. It requires some thinking and deliberation. But they are necessary.. Only a minute dis-

section and a close investigation of all conditions will, under difficult circumstances, lead to the disclosure of the fault. A close inspection of the discharges from the bowels (see pages 97 to 100) and the study of the information given in the chapters on "Artificial Feeding" as to the "too much" or the "too little" of casein, fat, or sugar in the food, will help a great deal to shed the indispensable light.

Only in rare instances is a chemical analysis of the milk required in order to get the requisite hints and, if deemed necessary, should not be neglected.

Treatment: The treatment must begin with the removal of the cause. All that has been said in the different chapters of this book as to the surroundings of the child, its care and nursing, and as to the mode of life, diet, etc. of the mother must be closely adhered to. If there is a valid reason to believe, or if a chemical analysis has demonstrated it to be a fact that the milk of the mother is too poor, her diet should be enriched and the amount of nourishment increased; if it is believed or has been proved that the milk is too rich, the diet of the mother should be less rich and the ration shorter. It is well nigh impossible to give precise instructions. The cases are too different. But enough has been said in the chapters of this book to enable any mother to do the right and proper thing, if she will take the trouble to study all that is said about the rearing and feeding of children.

Determined and earnest efforts to correct faulty conditions must be made in every instance before the nursing at mother's breast is allowed to be stopped. Thoroughly objectionable, yes unpardonable, is the course of many mothers who, upon slight ground and without further investigation, will wean their babies if they do not appear to thrive at once at the breast. Mother's milk, under ordinary circumstances, is and always will be the best and most satisfactory nourishment for a nursling. No child should be deprived

of this priceless blessing until all efforts to render the same suitable and wholesome have proved unavailing.

The temporary variations in the composition of the milk that are sometimes occasioned by sudden shock, pain, joy, anger, etc., or by the monthly period have, as a rule no permanent ill-effect on the health of the child. They pass over quickly. The mother, therefore, should continue the nursing without interruption.

FIRST NURSING OF THE BABY.

After the shock and pains of labor the mother needs rest. She should have it without restriction. The child requires no nourishment until it indicates its hunger by a lively crying. This usually happens at from six to twelve hours after birth. Until that time mother and child should be left alone.

When the signal is given to begin the feeding, the nipple is cleaned and prepared (see page 107) and the new-born laid to the breast. It is sometimes difficult to induce it to suck; it is not used to the business and must learn it first. But with the aid of a few drops of sweetened water on the nipple and the support of the now growing hunger the efforts are soon crowned with success, if the necessary patience and perseverance are practised.

It is a grave mistake to fill in the first days of life the stomach of the little baby with all kinds of soups, teas and concoctions, prompted by the belief that the few drops of milk the mother is producing could not satisfy the hunger of the darling. The need of nourishment of a new-born is, at this stage of its career, very little, and the contents of the breast, under normal conditions, are ample to satisfy its requirements. The feeding of other nourishment except the mother's milk is injurious in two ways: First, the foreign substances are not suited to the tender stomach and are liable to cause indigestion from the start. Second, the sensation of hunger in the nursling is suppressed.

The consequence is that the baby does not feel like sucking. But a forcible and vigorous sucking is, as we have seen on page 128, indispensable to the development of the milk-producing glands. An insufficient development of these glands is followed by an insufficient milk supply. Instead, therefore, of helping the child with these foreign substances, the imprudent attendant inflicts upon it the greatest injury she can, that is, she delays the production of milk and deprives the nursling of its natural food, which is supposed to come from the breast of its mother.

It is another very bad, though unfortunately not infrequent, practice to treat the infant upon its first days on earth with all sorts of purgatives and patent medicines on the theory that it is necessary to deliver as soon as possible the bowels from those black and pasty masses with which they are filled. This proceeding also is harmful and must be condemned. Nature needs no assistance in this direction. In her wise providence she has provided for her own laxative in the form of the unfinished, salty milk of the mother as it comes in the first days after birth (see page 128). It is the height of folly to pump this from the breast and throw it away, as is sometimes done ignorantly. The child needs it and must have it, must have it in the same quality and quantity as it is produced, unaltered and undiluted.

There are sometimes cases, it is true, in which the contents of the breasts are insufficient for the support of the baby. Then, of course, Nature must be assisted. These cases are indicated:

First, by a loss of weight after the third day. On page 81 we have learned that every new-born loses in weight the first days of its life, that its weight begins to increase again on the third day, and that it is at the eleventh or twelfth day as high as at the moment of birth. Any deviation from this rule must arouse suspicion, and if the weight is still decreasing

on the fourth or fifth day or even later, one can safely assume that the quantity of breast milk is deficient.

Second, by a rise of temperature. This is another important sign that the breast milk does not suffice. A healthy child which gets its nourishment in sufficient quantity has a normal temperature (see page 94). A rise above the normal, if no sickness—inflammation of the navel, the eyes, the mouth, the throat, the nose, furthermore cough, vomiting, diarrhea, etc.—exists, should always suggest that the mother's milk may be lacking. An examination with the scales and a comparison with the table on page 147 often confirms the suspicion.

The administration of plenty of cooked water soon reduces the fever in such instances. To compensate for the wanting mother's milk, a proper amount of artificial food should be granted, prepared according to the instructions given in the chapters on "Artificial Feeding." If milk does not agree, whey or peptonized milk or buttermilk must be substituted (see respective chapters).

HOW OFTEN SHOULD THE CHILD BE NURSED?

Regular intervals between the nursings are not yet necessary in the first two or three days after birth. The nursling awakens every four to six hours and should then be fed. From now on, however, commencing with the third or fourth day, regular intervals must be kept and the child be fed every two and one-half hours for the first two months, every three hours from the third to the sixth month, every three and one-half hours from the sixth to the ninth month and every four hours from the ninth to the twelfth month.

These intervals should be regularly and scrupulously kept. No mother should allow herself to deviate from this fundamental rule induced by the crying

of the child (see "Crying of Children" page 72). Nothing but harm can result therefrom.

More detailed information relative to the hours of nursing will be found in the following table.

TIME OF NURSING.

From the First to Second Month	From the Third to Sixth Month	From the Sixth to Ninth Month	From the Ninth to Twelfth Month
5:00 a. m.	5:00 a. m.	5:00 a. m.	6:00 a. m.
7:30 a. m.	8:00 a. m.	8:30 a. m.	10:00 a. m.
10:00 a. m.	11:00 a. m.	12:00 noon	2:00 p. m.
12:30 p. m.	2:00 p. m.	3:30 p. m.	6:00 p. m.
3:30 p. m.	5:00 p. m.	8:30 a. m.	10:00 p. m.
5:30 p. m.	8:00 p. m.	12:00 noon	
8:00 p. m.	11:00 p. m.		
10:30 p. m.			

As the foregoing table indicates, it is now re-emphasized that the child should not be nursed between the hours of 11 p. m. and 5 a. m. During this interval both mother and child should sleep. The stomach as well as the body needs rest at night.

If the child is uneasy and something must be given to quiet it, it may have come boiled water or fennel tea, slightly sweetened, if at all. These are harmless and answer as pacifiers just as well as the harmful milk.

The child should not be aroused from sleep to nurse, though some imprudent doctors recommend it. It is wisest to allow Nature to take her course. What she seems to demand should not be interfered with. When the child awakens, it is early enough to feed it.

HOW MUCH NOURISHMENT SHALL A CHILD RECEIVE AT EACH MEAL?

In the case of nursing infants the quantity of nourishment taken at each nursing is ordinarily regulated by Nature, as the normal breast contains just

sufficient nourishment to meet the requirements of the child. It is a self-regulating process under which the supply adapts itself to the demand. This is brought about thus in the wonderful economy of Nature. If the child is big and strong and needs much nourishment, it will suck long and vigorously—this stimulates the production and increases the supply. If the child is small and puny and needs little nourishment, it will suck less vigorously and a shorter time—this diminishes the production of milk and decreases the supply (see pages 128 and 129).

Experience has, in the main, established the correctness of this theory. But there are exceptions to the rule, as we shall see later.

However, in order to furnish the mother with some definite data as to the amount consumed by a normal child at each nursing, the following table is herewith submitted.

The numbers in the first column give the age of the child.

The numbers in the second column give the capacity of the infant's stomach, that is, the quantity of milk necessary to fill the stomach. They give further the quantity of milk which a child takes at every meal, since healthy infants fill their stomachs up at every meal. These same numbers indicate thirdly how much heavier a child should be after the meal than it was before the meal, and fourthly how much milk should be prepared for the average hand-fed child for every meal.

The numbers in the third column give the number of meals during the day.

The numbers in the fourth column give the length of the intervals between the meals expressed in hours.

The numbers in the fifth column give the total amount of nourishment taken by the average infant in 24 hours. This is the same amount which should

be prepared for a hand-fed baby as nourishment for a day.

Age of the child.	Capacity of stomach in ounces.		No. of meals.	Intervals between meals in hours.	Total amount of nourishment for twenty-four hours.
	With nursing infants: Difference in weight before and after nursing.	With hand-fed Infants: Quantity of milk to be prepared for each meal.			
1 week.....	1 to 1 ¼	OZS.....	8.....	2 ½ hrs.....	8 to 10 OZS.
2 “.....	1 ¼ to 1 ¾	“.....	8.....	2 ½ “.....	10 to 14 “
3 “.....	1 ¾ to 2 ½	“.....	8.....	2 ½ “.....	14 to 20 “
4 “.....	2 ½ to 3	“.....	8.....	2 ½ “.....	20 to 24 “
2 months.....	3 to 3 ½	“.....	8.....	2 ½ “.....	24 to 28 “
3 “.....	3 ½ to 4	“.....	7.....	3 “.....	25 ½ to 28 “
4 “.....	4 to 4 ½	“.....	7.....	3 “.....	28 to 31 ½ “
5 “.....	4 ½ to 5	“.....	7.....	3 “.....	31 ½ to 35 “
6 “.....	5 to 5 ½	“.....	7.....	3 “.....	35 to 38 ½ “
7-9 “.....	6 to 7	“.....	6.....	3 ½ “.....	36 to 42 “
10-12 “.....	7 ½ to 9	“.....	5.....	4 “.....	37 ½ to 45 “

HOW LONG SHOULD THE CHILD NURSE?

Under normal conditions a child will drink ten to fifteen minutes.

If the quantity of milk in the breast is very great, the child is satisfied in six to ten minutes.

If a child nurses habitually longer than twenty minutes or even from one-half to three-quarters of an hour, it is evident that the quantity of milk is insufficient.

SHOULD THE CHILD HAVE ONE OR BOTH BREASTS AT EACH FEED?

From what is said in previous chapters it follows that, under normal conditions, the child should have only one breast at each nursing. This is, as stated, necessary because the child will thus get a properly composed nourishment and at the same time keep the productiveness of the milk-producing glands at the necessary height. Only if necessity demands,

is this rule allowed to be deviated from. So in the first and second week after birth, when the quantity of milk in one breast is insufficient; so also later on if the contents of one breast continue to be insufficient (see page 133). Precaution, however, should always be taken to control the nursling. The mother should not give the second breast without being convinced by an examination that the first one is really empty. If this is neglected, the child is likely to acquire the habit of sipping off only the first easily coming portions and to grow a lazy nurser and harm the breast (see pages 128 to 129). If the child gets both breasts as a matter of necessity, it is necessary to begin the second time with that side which previously was given first. In this way the breasts are alternately completely emptied and their productiveness is not impaired.

If the lack of milk is caused by the mother's sickness or debility, it is best not to give the second breast, but to substitute the wanting mother's milk by properly prepared cow's milk. This gives the mother a better chance to recuperate. Instructions how to prepare the milk are given in the chapter on "Artificial Feeding."

CHAPTER XV.

WEANING.

WHEN TO WEAN—The weaning of the child should begin at the eighth to tenth month. The old adage “nine months carry, nine months nurse” is correct and, no doubt, the outcome of centuries of practical experience. It also coincides with the conclusions drawn from modern science. The following table may serve as an elucidation. It shows the normal weekly increase in weight of a child at mother’s breast as compared with that of a hand-fed baby.

INCREASE IN WEIGHT WITH

	Breast-fed Infants	Hand-fed Infants
In first month.....	6 $\frac{1}{3}$ ozs.	5 $\frac{3}{4}$ ozs. during a week
In second month.....	7 ozs.	6 $\frac{1}{3}$ ozs. during a week
In third month.....	6 ozs.	5 $\frac{2}{3}$ ozs. during a week
In fourth month.....	6 ozs.	5 $\frac{1}{3}$ ozs. during a week
In fifth month.....	4 $\frac{1}{2}$ ozs.	4 $\frac{1}{3}$ ozs. during a week
In sixth month.....	3 $\frac{2}{3}$ ozs.	3 $\frac{2}{3}$ ozs. during a week
In seventh month.....	3 $\frac{1}{3}$ ozs.	3 $\frac{1}{3}$ ozs. during a week
In eighth month.....	2 $\frac{3}{4}$ ozs.	4 ozs. during a week
In ninth month.....	2 $\frac{2}{3}$ ozs.	4 $\frac{1}{2}$ ozs. during a week
In tenth month.....	2 ozs.	3 $\frac{1}{2}$ ozs. during a week
In eleventh month.....	1 $\frac{2}{3}$ ozs.	3 ozs. during a week
In twelfth month.....	1 $\frac{1}{3}$ ozs.	3 ozs. during a week

Thus, we see that during the first five or six months the infant at the mother’s breast increases faster in weight than the one brought up artificially. In the sixth to seventh month they hold about equal. After the eighth month, however, the hand-fed child thrives better, because after that time the elements of mother’s milk are no longer sufficient to supply the physical demands of the child.

Numerous other signs are exhibited by Nature which show that there should be a change in the nourishment of the child around the eighth to the ninth month: The stomach and the bowels are now sufficiently developed and prepared to digest other kinds of food than the milk of the mother (see chapter on "Proprietary Foods"); the teeth, the instruments for mastication of more solid nourishment, are in the state of eruption; the milk of the mother begins to decrease in quantity; the sucking grows painful because of the child's making use of its teeth, etc.

Therefore, at this time, that is, in the eighth to ninth month, the weaning should begin.

It must be borne in mind, however, that there are exceptions to this rule. A great deal depends on the circumstances of the particular case. If the mother is weak, sickly, and anemic, but the child strong and healthy, the weaning may be commenced as early as the sixth to eighth month. If, on the contrary, the mother is strong and healthy, but the baby weak and sickly, the nursing should be continued until the health and the digestion of the child have improved sufficiently that the weaning can be done with impunity.

To continue the nursing of the child until the sixteenth or twentieth or even the twenty-fourth month without urgent cause or excuse, is very objectionable. It is usually done not for the benefit of the child, but in the selfish interest of the mother, who is induced by the general but erroneous belief that conception will not take place so long as nursing is continued and menstruation does not return. Such, however, is not always the case. Conception may take place whether the periods have returned or not.

This unpardonable lengthening out of the nursing period is of no benefit to the child and often very harmful to the mother. To furnish the large and continued milk supply drains the vitality of the mother

beyond the normal limits. The vital organs debilitate, the womb shrinks abnormally, the blood becomes watery, general weakness, loss of appetite, sleeplessness and nervousness develop, and the mother, who at the birth of her child was healthy and vigorous, becomes a mere shadow of her former self. This, we admit, does not happen in every instance. Some women can stand this abuse of Nature better than others. But this practice, persisted in at repeated nursing periods, almost invariably will ultimately result as stated.

If the monthly period returns before the proper time of weaning arrived, the nursing should not be interrupted. Even though the inevitable changes in the composition of the milk, occasioned by this event, are at times somewhat disturbing to the child, the effects are but temporary and will disappear as soon as menstruation is ended.

Should the mother, however, again become pregnant, a different rule applies. In this case the weaning must be commenced at once. The drain on the system is, under such circumstances, too great for most mothers. Besides, it is possible that the contractions of the womb, caused by the irritation of the nipple in consequence of the sucking (see page 103), may result in miscarriage and its possible serious consequences.

The child should not be weaned during the hot summer months. If the regular time of weaning falls into this season, it is better to continue nursing until cooler weather arrives. The change at that critical period from the pure and wholesome milk of the mother to an artificial food would endanger the life of the child.

HOW TO WEAN—When the time arrives to wean the child, care should be taken to do this gradually. The proper course to pursue is as follows: During the first week artificial food should be substituted

for mother's milk at one of the five meals, namely at midday; in the second week at two of the five meals, at noon and evening; in the third week at three of the five meals; in the fourth week at four and finally in the fifth week at all of the five meals—the weaning being then complete.

A sudden weaning is not justified unless conditions arise suddenly that forbid the continuance of the nursing.

The breasts of the mother adapt themselves to the changing circumstances. In consequence of the lessened irritation of the nipple the production of milk decreases, yes, in some cases, decreases so rapidly that weaning must be hastened.

In other cases, however, the supply of milk remains as abundant as before. The partially weaned child cannot master it; the breasts swell up and become painful. The more sudden the weaning, the oftener this occurs.

The remedy is simple and easily applied. The management of the breasts should be the same as laid down on pages 135 to 138, with the one exception that so long as the child nurses the belladonna plaster must not be used, for a portion of the drug will be absorbed into the milk and might injure the child. The milk should not be pumped out except as a last resort, if the pain from the distention becomes unbearable. The pumping acts somewhat in a similar way as the sucking of the child, that is, it tends to increase the secretion of the milk.

By tying up the breasts, decreasing the fluids in the nourishment, and using a light laxative, the difficulty ordinarily yields promptly.

SUBSTITUTES FOR MOTHER'S MILK DURING THE WEANING PERIOD AND AFTERWARDS.

The best substitute for mother's milk is cow's milk, prepared as described in the chapters on "Artificial Feeding." The only difference is that during

the first weeks of weaning the dilution of the food should be slightly greater than is prescribed for the corresponding age of hand-fed children. If the weaning be sudden, the beginning should be made with only one-half of the ordinary strength of the mixture, and this be increased gradually during the next few weeks to normal proportions.

It is, however, not always easy to induce the child to take cow's milk. It soon discovers that mother's milk is a more palatable and far more precious beverage and will refuse the substitute in spite of all persuasion. In such instances the hunger is mother's best ally. By allowing the rebellious little one to fast for from twelve to twenty-four hours, its gnawing stomach will soon bring it to terms and convince it that cow's milk is better than nothing. Once the ice is broken, no further difficulty need be feared.

But cow's milk alone without further additions does not suffice after the sixth or seventh month and should be supplemented by other kinds of nourishment.

As the time for the beginning with additions may be put the time after the eruption of the first teeth. At this stage the digestive organs of the child become capable of mastering farinaceous foods, and it is mainly upon these that dependence should at first be placed. Toast and crackers, dry or scalded in slightly sweetened water, can be given, also weak veal and chicken broth in small quantities, either alone or with the white of an egg added, furthermore gruels of oat meal or rice, mush of corn meal, or any other of the breakfast foods. It is also at this period that the numerous food preparations, known to the trade under the names of Nestle's Food, Mellin's Food, Horlick's Malted Milk, etc., etc., are most advantageously used. The better of these foods are splendid aids in bridging the transition from mother's milk to the ordinary, every-day nourishment. They also merit re-

cognition as a partial diet for older children, more especially for those whose digestive organs for one reason or another are debilitated and weak.

In conclusion it must be added that, after weaning is completed, great care should be taken not to overfeed the child either in giving too much at a time or in feeding too often. Even slight irregularities are often followed by very serious consequences.

CHAPTER XVI.

SELECTION OF A WET NURSE.

The selection of a proper wet-nurse cannot be made except by a physician. A mere enumeration of the most cardinal points may, therefore, be sufficient.

A wet-nurse should not be younger than eighteen nor older than thirty-five years; she should be able to furnish at least three-fourths to one quart of milk a day; she should have no catching disease, and her own baby should not be older than six or eight weeks.

Further details under this head will be omitted.

CHAPTER XVII.

HAND-FEEDING.

If human milk cannot be granted to the child, the milk of a domestic animal must be selected as the best substitute, be it that of a cow, or an ass, or a goat, or a mare. For, in spite of the great efforts made in recent years by scientific investigators and by the spirit of commercial enterprise, no preparation has as yet been placed upon the market that can properly be designated a satisfactory substitute for good, fresh and pure milk.

It is not intended, hereby, to detract from the value of those proprietary baby-foods which are on the market. By no means! Though by far the largest percentage of hand-fed children thrive best on fresh animal milk, there remain some few cases where it cannot be digested. For these and for older children such preparations are sometimes most welcome substitutes for fresh milk. The most desirable of these will, therefore, receive more detailed attention in a later chapter.

Of the product of the different kinds of animal, enumerated above, cow's milk is the only one which can be procured by the masses of the people. To this, therefore, refers all that is said in the following chapters.

POINTS OF DISTINCTION BETWEEN COW'S MILK AND MOTHER'S MILK.

It may seem useless to many mothers to penetrate deeper into the secrets of nutrition of babies. But it is absolutely necessary. The more light is shed, the plainer the workings of Nature present themselves and the more thorough the conditions which

influence the digestion and assimilation of the baby's food are understood, the better can an intelligent mother overcome difficulties that are insurmountable to an unintelligent and uninstructed attendant. We, therefore, urgently advise to study carefully the following differences between mother's and cow's milk. They must be known in order to master the situation.

Before, however, we enter upon the explanation of the differences of the two kinds of milk, it becomes



Fig. 38—Represents milk as seen under the microscope. The little droplets represent the fat-globules.

necessary to say what, in the main, are the constituents of milk.

The milk consists, stated roughly, of

(1). A proteid substance, called casein. It is that substance which forms the clots when the milk sours, and from which the cheese is made. It is the

most important part of the milk and has the greatest value as a nourishment.

(2). Fat. The fat exists in the milk in the form of an emulsion, that is, it is split up into minute particles, which are kept apart and are prevented from uniting by a cover of proteid substance (see Fig. 38 on preceding page).

If this separating cover is broken by agitating, as it is done in churning, the little globules of fat unite and form the butter.

(3). Sugar. The sugar contained in the milk is the so-called "milk-sugar." It is different from the ordinary cane-sugar, as it is less sweet and less soluble.

(4). Salts.

(5). Water.

TABLE SHOWING THE PERCENTAGE OF THE DIFFERENT CONSTITUENTS OF MOTHER'S AND COW'S MILK.

	Mother's Milk	Cow's Milk
Proteid Substance (casein, cheese)	1.5 per cent.	4 per cent.
Fat	4 per cent.	4 per cent.
Sugar	7 per cent.	4 per cent.
Water.....	87 per cent.	87 per cent.

From this table we can see that cow's milk contains about 4 per cent each of casein, fat and sugar, while mother's milk contains much less casein, but much more sugar, the percentage of fat being about the same.

This difference in constitution is the first and most important point of distinction between cow's and mother's milk.

most important point of distinction between cow's

in which the milk curdles in the stomach of the child. Cow's milk turns into big, tough lumps, while mother's milk forms fine, light flakes. The finer the flakes, the better the digestion, for the stomach juice can dissolve the fine flakes much easier than the big, tough lumps.

A third essential point of distinction, also in favor of mother's milk, lies in the purity and cleanliness of the product. From mother's breast the milk flows directly into the mouth of the baby and from there into the stomach, clean, pure and unadulterated. Cow's milk, however, is on its way from the udder of the cow to the consumer subjected to the grossest changes and contaminations. Not only is the milk frequently diluted with water or adulterated with chemicals, but also, on account of negligence, delay in transit, insufficient icing in warm weather, etc., delivered to the mother in such a condition that it is practically unfit for human use. This happens most often in large cities where the milk has to be transported for many, many miles, and where it passes through the hands of a number of dealers before it reaches the child. The much higher mortality of hand-fed children in cities as compared with those of rural communities bears witness to this fact.

Great efforts, indeed, have been made by the health authorities of many cities to watch over, and improve, the supply of milk, but, in spite of the stringency of the regulations and the severity of the punishment inflicted upon the transgressors of the law, we are as yet far away from a satisfactory solution of this important problem.

It follows from the foregoing that cow's milk, although the best substitute for mother's milk, is far from being a perfect substitute. It behooves, therefore, to explain what had best be done to overcome the above mentioned disadvantages of cow's milk as much as possible. This, we shall do later.

REQUIREMENTS OF A GOOD FOOD.

A nourishment which is good and suitable for infants must fulfil the following requirements:

- (1). It must be pure and unadulterated.
- (2). It must be as near to mother's milk as possible in its constitution.

SIGNS OF A GOOD MILK.

(1). Color glaringly white with a tinge of yellow—not transparent or bluish white.

(2). Entire freedom from odor. A so-called "cow smell" is objectionable, as it indicates gross contamination.

(3). Mild but substantial taste. A so-called "cow taste" is also objectionable, as it indicates the same gross contamination.

(4). A drop, placed upon the finger nail, should arch and not spread.

(5). A drop, falling into water, should become immediately diffused and not sink down to the bottom as a coherent mass.

(6). The settlings should contain neither dirt, slime, nor other foreign substances.

CHAPTER XVIII.

HOW TO PRODUCE A GOOD MILK.

A number of requirements must be fulfilled in order to produce a good and wholesome milk. We have to discuss these matters more minutely because a great number of families, even in cities, keep their own cow for the purpose of assuring themselves fresh and unadulterated milk, and further because familiarity with these requirements enables every mother to form her own opinion about the quality of the milk she is buying, if she has opportunity to inspect the cow and her keeping.

A COW MUST BE HEALTHY—This is very important. Only a healthy cow can furnish wholesome milk. It is, however, not always easy to determine if the cow is healthy or not. In many instances, it requires a careful examination by a trained veterinary surgeon to make the decision.

Foot-and-Mouth Disease as well as diseases of the udder can easily be detected on careful inspection—not so tuberculosis, the most common and widespread of cow diseases. In order to exclude this scourge with certainty, a subcutaneous injection of tuberculin is required. If this is properly made and the animal remains free from fever, the evidence is conclusive that the cow is also free from that disease.

More recent investigations along this line have demonstrated the fact that tuberculosis is enormously prevalent in milch cows. In the state of New York seven per cent were found affected, in other states more, and in some even up to fifty per cent. The battle against the scourge is being fought energetically and universally. Many dairymen test their

cows voluntarily; upon others, who supply the milk to certain large cities, it has been made compulsory to have their herds examined once a year by state authorities, who kill every cow found infected and reimburse the owner.

Such examinations are of the utmost importance for the welfare of the infants. The germ which causes tuberculosis of the cow is the very same microbe that causes consumption and scrofula in human beings. It goes over into the milk of stricken animals and infects the child that consumes this contaminated milk in a raw condition.



Figure 39. (a) Bacillus Tuberculosis, that is, the germ which causes consumption. (b) Pus Cells.

It goes without saying that the milk of cows afflicted with Foot-and-Mouth Disease should not be used. Nevertheless numerous instances are on record where unscrupulous dairymen, in spite of knowing of the existence of the disease, sold the dangerous milk. As a consequence, a number of widespread epidemics of serious mouth and intestinal diseases in human beings developed, which, upon investigation, were traced back to the diseased cows.

The following example may serve as an illus-

tration. In the second half of April, 1905, there were at Colchester, England, five to six hundred persons suddenly taken ill, suffering with a violent inflammation of the throat with high fever. Suspicion fell upon the milk. An investigation disclosed the fact that all families in which the sickness developed received their milk from the same large dairy firm. This led to an examination of all the farms from which this firm was supplied and subsequently to the detection of a cow suffering with an inflammatory process of the udder. No new case developed after the milk of this animal had been suppressed.

The milk of a cow only slightly affected with tuberculosis can safely be consumed if it is cooked. Cooking destroys the bacillus of tuberculosis. The milk of cows with far advanced tuberculosis, however, is unfit for use and should be condemned.

THE COW MUST BE PROPERLY FED—
The best food for cows, the milk of which is supposed to be consumed by infants, is the so-called "dry food"; consisting of hay, bran, etc. Also the milk of those cows is good that for some time have been grazing if at least a part of their food consists of dry fodder. The milk of cows that are wholly fed on fresh grass is not recommendable for babies. Objectionable is the milk of animals fed on brewery or distillery slop, refuse of starch and sugar factories, potato-mash, oil cakes, rape seed cakes, kitchen swill, etc. Objectionable is further the milk of cows that have just been changed from dry food and turned loose into the pasture, or of cows the fodder of which has otherwise been changed suddenly.

The reason why such milk is unwholesome for the baby lies in the fact that a number of pungent chemical substances as well as dangerous microbes, contained in such foods, pass unchanged over into the milk and may cause serious sicknesses.

THE TIME ELAPSED SINCE CALVING MUST BE RIGHT—The best and most uniform milk is obtained from cows that have come in not less than two and not more than six months ago. Before the second and after the sixth month the milk is not as good and should not be used if another kind can be obtained.

THE COW MUST BE PROPERLY HOUSED AND CARED FOR—To obtain a good and wholesome milk it is necessary that the cow should be properly cared for. She must have a roomy, light, airy, and well ventilated stable and a clean, dry bed. Cleanliness, air, light and ventilation are as essential to the health of the animal as they are to the health of the human being. A cow kept in a dark, damp, and filthy corner cannot produce a good, wholesome milk. No mother should buy her product. It cannot be good.

THE COW MUST BE TREATED GENTLY—Maltreatment and abuse of the cow must be avoided. As the milk of the mother (see page 122), so the milk of the cow will be influenced by emotions and affections. An irritated and embittered cow furnishes bad milk. Many cases are on record where the milk of maltreated cows sickened previously healthy babies.

CHAPTER XIX.

MILKING AND CARE OF THE MILK.

Supposing that the cow is healthy, and that her feeding and care is properly handled, it does not follow that the milk, when it comes in the hands of the mother, fulfils the requirements of a standard product. Cleanliness in milking and proper transportation are fully as important as a proper production.

MICROBES AND POISONS IN SPOILED AND IMPURE MILK.

Everywhere on earth, in the air, the water and the ground, there are teeming millions, yes billions, of infinitesimal beings, which are only visible under the microscope. They are most numerous and reproductive in badly ventilated, dark and damp places, where the air is musty and filth abounds. These little beings are called "microbes or germs." They are the cause of decay and destruction and also of many diseases. If they come into the milk in great numbers, they cause disintegration and putrefaction. Children fed with such contaminated milk will grow sick invariably. Colic, vomiting, diarrhea, summer cholera and many other, even fatal, diseases develop. But there is no warning for the mother. It is impossible in most instances to recognize these gross contaminations. The milk is not soured or coagulated. It may resemble in appearance, taste and smell a faultless product and yet contain deadly poisons.

The ability of these microbes to grow and multiply is almost incredible. It is checked by cold and is favored by warmth. For this reason milk keeps longer in winter and on ice, and spoils more readily in summer and in warm places.

Some data on these points will be of interest to the reader and very instructive.

Dr. Miquel in France found

In 16 drops of fresh milk direct after milking.....	9,000 microbes
In 16 drops of the same milk after 1 hour.....	21,700 "
" " " " " " " 2 "	36,250 "
" " " " " " " 7 "	60,000 "
" " " " " " " 9 "	120,000 "
" " " " " " " 25 "	5,600,000 "

The same authority found in 16 drops of milk after standing for 15 hours at a temperature of

59 degrees Fahrenheit	100,000 microbes.
77 degrees Fahrenheit	72,000,000 "
95 degrees Fahrenheit	165,000,000 "

These figures illustrate that milk offers to microbes a very favorable soil to grow in and is, in consequence, a very perishable food.

Infection lurks everywhere. Not only hay, straw, dust and insects with their millions of adhering microbes fall into the milk, if handled carelessly, but also cow dung, this most dangerous of all materials, is a very frequent addition. It contains enormous numbers of microbes. Experiments have shown that every sixteen drops of a quart of milk to which the minute, hardly visible quantity of one third of a grain of cow dung had been added contained seven millions of microbes, that is, about the same number as contained in ordinary sewage. It seems horrible, but such contaminations are by no means infrequent. Examinations made in Berlin, Germany, have demonstrated the fact that the inhabitants of that city consume daily about 300 pounds of cow dung in their milk. The same holds true with our large cities. In these it is certainly not better, rather worse.

The microbes are dangerous to the human organism in two different ways. First, by their presence. If swallowed, they multiply in the stomach, the bowels or the blood and produce the disease specific

to their kind. Second, by the productions of poisons, so-called "ptomains".

The killing off of the microbes by boiling does, therefore, not free a contaminated milk from its dangerous character, just as the cooking of decomposed eggs, fish or meat does not make them fit for eating. Even if the microbes are dead, the poisons produced by them are not changed by the cooking. They remain in the milk just the same and make it unfit for use.

TRANSMISSION OF INFECTIOUS DISEASES IN THE MILK FROM ONE PERSON TO ANOTHER.

There are a great number of infectious diseases which may be transmitted from one person to another in the milk without the latter being visibly affected. A great many epidemics of scarlet fever, measles, diphtheria, typhoid fever and other scourges have come to notice in recent years which could be traced with absolute certainty to sick persons in the family or among the employes of the dairymen. Some may be enumerated.

In August, 1895, eighteen cases of typhoid fever developed suddenly in a certain district of Buffalo in families that, without exception, took their milk from a certain dairyman. An investigation disclosed the fact that his wife suffered from typhoid fever, and that he nursed her without taking any precaution whatever to prevent the spread of the disease. No new case developed after the sale of the milk of this dairyman was forbidden.

In February, 1899, twenty cases of scarlet fever developed in the same city within a period of four days. Here also the families in which the disease broke out bought their milk from the same dairyman. Upon investigation it was found that one of the employes, who did the milking and also handled the milk, was a convalescent from scarlet fever. No new

case developed after the sale of the infected milk had been prohibited.

Hundreds of other instances could be cited. These two may suffice to call the attention of the mothers to such possibilities. It is always safest to hold in suspicion the milk of such dairymen as have infectious diseases in their homes.

HOW TO AVOID DISEASES THAT MAY BE TRANSMITTED IN MILK.

To this end care must be taken:

First, that as few microbes as possible find their way into the milk.

Second, that those germs which succeed in getting there are rendered harmless before they spoil the milk or do damage otherwise.

The observation of the following instructions will avoid the danger.

Persons who handle milk should neither be sick themselves nor nurse nor come in contact with others suffering from catching diseases. Cases of infectious diseases, developing in the house of the dairyman, should be removed from the vicinity of the stable and the milkhouse. No one who has to do with the milking or the handling of the milk or the milk cans should come in contact with the diseased or his nurse or with the utensils used in the sickroom. Mothers should watch over these things and inquire from time to time whether sickness prevails in the house of the milkman. If this be the case, it is safer to get the milk from another place.

All utensils, such as cans, bottles, etc., which come in contact with diseased persons or come from houses in which catching diseases prevail, must be thoroughly sterilized either by boiling or with a solution of formalin (Prescription 54), one-half teaspoonful to a gallon of water, before they are placed to-

Prescription 54.

Formalin 4 ounces

gether with the non-infected bottles. Violations of this rule are frequent and happen most often with dealers who deliver their milk apportioned in sealed bottles to the houses of their customers taking the container back when empty.

A wary and well instructed mother will not forget to ask her dairyman occasionally some pertinent questions as to these matters. The direct demand of an intelligent public and the danger of losing his customers, if the sanitary rules are not strictly complied with, will do more to stimulate the dairyman to do what is right than all the regulations of health departments.

MILKING.

Milking had best be done outside of the stable in a separate room, set aside and intended for this purpose. Both the hands of the milker and the udder and the teats of the cow should be thoroughly cleaned with warm water and soap before milking begins. The first jets of milk should be thrown away, since they contain the greatest number of microbes. All vessels for the reception of milk should be scrupulously clean and should, when filled, be promptly removed to the storage room.

FURTHER TREATMENT AND STORAGE OF THE MILK,

In this storage room, the so-called "milkhouse", the milk is strained through a fine cloth or better through a layer of absorbent cotton and at once cooled down in cold water or better on ice to a temperature of 45 degrees Fahrenheit or below. Thus it must be kept. The quicker the cooling is done, the better for the milk, since cold checks the growth of microbes (see page 165) and hinders the spoiling of the milk.

The milkhouse should be connected neither with the stable nor with the house, nor should it be located in the neighborhood of cess-pools, closets or any other

depository for refuse matter. Exhalations from man or beast and from depositories of such refuse matter are all alike contaminating. It goes without saying that utmost cleanliness must be practised in such storage rooms and that they should be well screened and protected against the invasion of flies.

DELIVERY OF MILK.

Also during delivery the milk should be iced and kept at a temperature of 45 degrees Fahrenheit. If this is beyond reach, it should be delivered as soon as possible and the suggested precautions be taken by the mother. Milk that has been dragged and jolted around on the wagon for many hours in warm weather or stood in the store all day without being iced is unfit for use and dangerous for the infant.

DISINFECTION OF THE MILK VESSELS.

All vessels used by the dairyman during milking, storing and delivering of milk should, directly after emptying, be thoroughly cleaned and disinfected with the solution of Formalin given in prescription 54. Bottles and jars, used in the house of the consumer, should also be cleaned immediately after emptying and, if they belong to the dealer, thus be returned. If they come in contact with persons suffering from catching diseases, a sterilization by boiling is required before they are set aside. In this way only can the decomposition of infected remnants, their clinging to the walls of the vessel and the infection of the fresh milk be avoided.

Here we will end our short sketch outlining the production and the proper management of the milk on its way from the udder of the cow to the hands of the mother. The latter knows now what she can and should expect from a standard product and is able to define her demands intelligently and judiciously.

If the milk is delivered to the house of the custo-

mer, pure and unadulterated, the responsibility of the dairyman ends; that of the mother begins. It is now her duty to see that the milk, she received in good condition, remains so until it is consumed by the child. How this is done, we shall see in the following pages.

CHAPTER XX.

CARE OF THE MILK AT HOME.

In spite of all precautions, it is impossible to get a wholly germ-free milk from the cow; it is still less possible to deliver such a product into the hands of the mother. For, on the one hand, a certain number of microbes always pass with the milk from the cow and, on the other hand, the necessary contact of the milk with the vessels and its exposure to the air will result in the lodgement of others. These germs may, under certain circumstances, become harmful to the child and endanger its health. In order to avoid this possibility, the milk must be prepared by the mother so that danger is excluded.

This can be done either by the addition of chemicals or by sterilization or pasteurization.

ADDITION OF CHEMICALS.

The addition of chemicals to the milk is generally considered harmful, although some, even prominent, physicians recommend it. It is practised daily by many dairymen without the knowledge of their customers. The drugs usually employed are: Boric Acid, Borax, Salicylic Acid and Formaldehyde. The latter has, of late, again been strongly advocated by Prof. Behring of Germany, one of the foremost investigators and scientists in the field of medicine. We do not recommend its use save in cases where pasteurized milk does not agree with the child and cannot be made to do so, and the raw milk cannot be relied upon or cannot be kept from spoiling on account of unfavorable conditions, caused, for instance, by want of ice, etc. The proportion of Formaldehyde to the milk is 1:5,000 to 1:10,000. Formalin (Prescription 54),

which can be bought in any drug store, is a 40 per cent solution of Formaldehyde. Five to ten drops of this solution to a quart of milk will yield the above named proportion. This percentage of Formalin keeps the milk from souring for a number of days.

Prof. Behring, supported by a large experience, claims that Formaldehyde in these quantities is perfectly harmless to infants. His recommendation, however, is disapproved by others on the ground that mothers are likely to place too much reliance upon this drug and to neglect the indispensable precautions and cleanliness. This, of course, should not happen and cannot be an objection against the use of Formaldehyde, if the need of it is indicated.

STERILIZATION.

By the term "sterilization" is meant the killing off of germs. It can be done either by heat or by drugs. If "sterilization" is spoken of in connection with milk, it is generally meant "sterilization by cooking", since cooking is the method most commonly employed. In that sense of the word "sterilization" is used in the following pages.

The time of cooking is five to ten minutes. It is done either in a simple earthen or enameled pot, fitted with a cover, or in a special instrument, first devised by Prof. Soxhlet of Germany. This instrument consists of a kettle and a number of bottles. The milk is mixed according to the need of the child, filled into the bottles in the proper quantity and sterilized. Precautions are taken that after sterilization the milk is protected against spoiling. All that is further needed is to take for each feeding a bottle out of the instrument, to place it in warm water until its contents have reached a temperature of about 95 to 100 degrees Fahrenheit, to shake it well and to give it to the baby. More exact instructions accompany each instrument.

No matter how the milk is sterilized, whether in the apparatus described or in an ordinary cooking

utensil, the after-treatment remains the same, that is, the milk must be cooled immediately and placed on ice for keeping. For, in spite of the boiling, the milk would spoil in many instances if kept in a warm place and at a temperature favorable to germ life (see page 165), since there remain always some germs alive, ready for propagation and multiplication, if favorable conditions are allowed to prevail.

Disadvantages of Sterilization — Sterilization has, besides its advantages, some disadvantages. The boiling changes somewhat the constituents of the milk, the taste suffers and the digestibility is diminished. Many children, therefore, refuse boiled milk, others take it and thrive well, but are always troubled with constipation.

PASTEURIZATION.

In order to avoid these disadvantages and yet not lose the advantages of sterilization, Prof. Pasteur of France developed a process which is called after its inventor "Pasteurization." It is a partial sterilization, that is, the milk is not heated to the boiling point but only to a temperature of 165 to 170 degrees Fahrenheit for twenty to thirty minutes. By this lower degree of temperature most of the microbes dangerous to human life are killed, such as the bacillus of tuberculosis, typhoid fever, diphtheria, cholera, mange, etc., while the less dangerous but more resistant germs remain alive. Pasteurized milk, therefore, does not keep so long as sterilized milk, that is, on an average only twenty-four hours. But it has the great advantage that the undesirable chemical changes therein, which result from boiling, are almost entirely avoided, that its taste is changed but slightly, that the children like it better and that its digestibility is scarcely diminished.

Pasteurization can be done either in the apparatus ordinarily used for sterilization or in an instru-

ment specially designed for the purpose. The latter can easily be made at home. It needs

First, a tin pail or pot about ten inches deep and nine inches in diameter, fitted with a tightly closing cover, which must contain eight holes, one inch in diameter and arranged in a circle midway between the border of the cover and its center. The latter should also be perforated with a hole of the same size.

Second, a wire basket of sufficient size to hold several nursing bottles and provided with feet about three inches high.

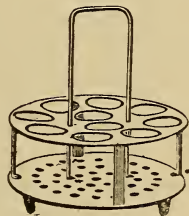


Figure 42. Basket for Sterilization or Pasteurization.

Directions: Fill the milk, properly mixed and in the proper quantity, into the bottles and close them with a plug of fresh, clean absorbent cotton. Cover the bottom of the tin pot with about one and one-half to two inches of water and bring to the boiling point. Then lower slowly the basket containing the bottles into the steaming pail. Do not allow the bottles to touch the boiling water or they will burst. Place the cover in position and cook for twenty-five minutes in winter and thirty minutes in summer. Then remove the bottles, place them in warm water and cool gradually but quickly. To place the bottles directly into cold water would cause them to burst. After cooling place and keep on ice.

Allow the cotton to remain until the bottles are used. Then remove it. Feed after warming and

shaking the milk. Whatever the child does not drink, throw away.

Pasteurization should be done as soon as the milk arrives in the house. The quantity for the day may be prepared at once.

STERILIZATION OR PASTEURIZATION?

For those who have no special apparatus the best way is to let the milk come to the boiling point, cool it, place and keep it on ice.

If an apparatus be at hand, the use of the one or the other method depends on circumstances.

A milk treated at the dairyfarm, directly after milking, as it is done frequently nowadays, should be pasteurized not sterilized. Pasteurization is also to be preferred at home if it is reasonably sure that the milk comes from a healthy animal and is not older than a few hours.

Sterilization should be practised if the child suffers from diarrhea, or if, as usually in large cities, the milk is not delivered until twelve to eighteen hours after milking, or if there is room for doubt as to the health of the cow, or if catching diseases prevail in the house of the milkman and a change in the source of the supply cannot well be made.

RAW OR HEATED MILK?

Both raw and heated milk have their advantages and disadvantages. While the raw milk is better to the taste, more easily digested and less apt to cause constipation, it is also a frequent source of disease. Its use, therefore, is to be recommended only in such instances where the child refuses the heated milk, or does not thrive on it, or suffers from an obstinate constipation, which will not yield to the proper changes in the nourishment (see chapter on "Constipation"), and where the quality of the milk as to purity, cleanliness and freshness is beyond doubt and proper means for icing are at hand.

If the cooling cannot be properly done and raw milk must be given, an addition of Formaldehyde is permissible (see page 172).

As a rule, sterilized or pasteurized milk is preferable. This is true especially in large cities and in summer, when so many, many children die from diseases of the bowels that can be prevented by the heating of the milk.

The author is well aware that his recommendation of sterilization and pasteurization does not receive the support of all physicians; but a large experience and a close observation, made on a great number of children, has again and again convinced him that the advantages of sterilization and pasteurization by far outweigh the disadvantages.

Exact investigations, made in New York by an eminent specialist in the year of 1903, led to the same conclusions and shall be briefly referred to in support of the above stated opinion.

Fifty infants, living under practically the same conditions, were selected. Twenty-seven were fed on raw milk, while the remaining twenty-three received milk pasteurized at 165 degrees Fahrenheit. After but one week twenty of the twenty-seven fed on raw milk were affected with more or less serious derangement of the bowels; their milk had to be pasteurized in order to save their lives. Of the twenty-three fed from the beginning on pasteurized milk all but five remained entirely well, these five being troubled only with a slight diarrhea.

As a further illustration of the great value of pasteurization a paragraph will be copied which appeared in the Journal of the American Medical Association of January 6th, 1906. Under the head "Results of the Use of Pasteurized Milk" we read as follows:

"The records of the Health Department of New York show that in 1892 there were in the city 194,214 children under the age of five years and that 18,684

died in the year the rate being 96.2 per 1000. Pasteurized milk began to be used and in 1894 out of 256,137 children there were only 16,137 deaths, or 63 per 1000. At the death rate of 1892 with the present population there would have been 24,640 deaths, whereas there were actually only 16,137, so that apparently there were 8,503 lives saved. Estimated on this basis, it is claimed that there were 4,025 lives saved last summer. On Randall's Island, where the city's children are cared for, the death rate prior to 1898 was 41.83 per cent. After Nathan Strauss established a pasteurizing plant on the island the death rate was cut down to 20.75 per cent for the past seven years. Last year the rate among children was only 16.52 per cent. This reduction in the mortality is caused entirely by the pasteurized milk, as other conditions were unchanged."

The lesson to be taken from these and similar observations is too plain to require more detailed explanation, and the results are the more noteworthy when we consider that the disadvantages arising from the heating of the milk, such as diminished digestibility, constipation, etc., can easily be overcome in most instances by the addition of cream, gruels, lime water, sodium citrate, etc., as we shall see later.

But let us also sound a note of warning. The striking advantages of pasteurization and the great safety guaranteed thereby should not blind a mother to her duty to procure a clean, pure and unadulterated milk. She must not think that it does not matter what kind of milk she buys and how many microbes it contains so long as pasteurization is practised. It is true that the dangerous microbes are killed by the process of heating, but it is also true that the poisons which were already developed are not removed thereby. They remain in the milk and are just as injurious, yes sometimes even more injurious, than the germs themselves (see page 167).

**IS THE MILK OF ONE COW OR THE MIXED MILK OF A HERD
PREFERABLE?**

No objection can be made against the milk of one cow if she is healthy, if she is properly fed, well cared for and well treated.

As a rule, however, the mixed milk of a herd is preferable. It secures a more uniform product. For the changes in the milk of one cow, occasioned by the hour of milking, food, mental affections, etc., are equalized in the mixture.

A further advantage is this: Should the cow happen to be sick, the child is much more endangered if it receives the milk of this one than if it receives same mixed with the milk of other healthy animals.

CHAPTER XXI.

HOW TO PREPARE THE MILK ACCORDING TO THE AGE OF THE CHILD.

This chapter is one of the most important in the book. To it is called the particular attention of mothers and others upon whom the rearing of children may devolve. Its careful study is earnestly recommended.

As stated on page 158, there exist substantial differences in the constitution of mother's and of cow's milk. These differences must be equalized. To do so, the excess of proteid substance (casein or cheese) in cow's milk must be diminished by dilution with water and fat and sugar be added to make up their deficiency.

DILUTION OF THE MILK.

Complicated formulas have been advanced for the dilution of cow's milk in order to bring its composition as near as possible to that of mother's milk. These, of course, can not be given. Few mothers would understand them. We regard it far more practical to give simple and plain rules. If they are grasped, it will be easy to find and make the changes, necessary in each particular case.

The following table gives the percentage of water and milk to be used in the mixture for children of the different ages.

IT IS TO BE MIXED FOR AN INFANT

1 month old.....	1	part of milk with 3 parts of water
2 to 3 months old.....	1	“ “ 2 “ “
3 to 6 months old.....	1	“ “ 1 “ “
6 to 9 months old.....	2	“ “ 1 “ “
9 to 12 months old.....	3	“ “ 1 “ “

Children over one year old can stand the clear milk and should, therefore, have it undiluted.

The term "part" used above may indicate any given measure, as a tablespoon, an ounce, a teacup, etc. It is intended to express that the same measure must be used for both milk and water. For instance, if we say: one part of milk and three parts of water, it means, one tablespoonful of milk and three tablespoonfuls of water, or one ounce of milk and three ounces of water, or one teacupful of milk and three teacupfuls of water, etc.

The foregoing figures represent average proportions, that is, they are adequate to the average normal infant. Exceptions are frequent. Some children seem to thrive better on a more concentrated, others on a more diluted food. The weight of a child must serve as a guide under such circumstances. If the child is heavier than it should be according to its age, a stronger mixture, and if it is lighter, a weaker mixture than its age would otherwise demand is generally required.

An intelligent mother should, therefore, go not only by the age but also by the weight of her child in deciding upon the strength of the mixture. In abnormal cases, the table on page 80 tells her which age corresponds to the weight and the table on page 180 which mixture is best suited for the age so found.

As a rule, however, the average proportions given above, will prove to be right. A mother should always begin with these. If the child thrives well (see weighing of the child page 77), there is no reason to change. If it does not thrive well, if its weight does not increase satisfactorily, although digestion seems normal and the passages look well, a trial with a more concentrated nourishment is indicated. But if it suffers from indigestion and derangement of the bowels, such as diarrhea, constipation and colic, a trial with a weaker mixture should be made. More

detailed instructions are found in the chapter on "Changes in the Composition of the Nourishment Necessitated by Disturbances of Digestion."

ADDITION OF FAT.

The diluted cow's milk contains far less fat than the child requires. The deficiency must be made up by the addition of enough cream so that the food contains about 4 per cent of fat. This is accomplished by adding two and one-half ounces of a 16 per cent cream to one pint of the mixture.

In cities, it is easy to get a cream of this percentage. Every creamery keeps a 20 per cent centrifugal cream. Four parts of this with one part of milk will yield the 16 per cent cream, that is, to four tablespoonfuls of 20 per cent cream must be added one tablespoonful of milk to get the 16 per cent cream. If the 20 per cent cream is not obtainable or cannot be relied upon as pure and fresh, the 16 per cent cream can be made at home in the following manner. One quart of good, rich milk is poured in a flat, covered vessel and cooled well either in cold water or, better, on ice. The low temperature prevents the spoiling of the milk and facilitates the separation of the cream. After standing for twelve hours, best over night, the cream is taken off. If the milk is allowed to stand only four or five hours, a quart of milk will yield ten ounces of an 8 per cent cream; if allowed to stand six hours, it yields six ounces of a 12 per cent cream. If this cream of lower percentage is used, comparatively more must be added, that is, five ounces of the 8 per cent cream and three and three-quarters ounces of the 12 per cent cream to the pint of mixture.

This amount of two and one-half ounces of a 16 per cent cream to the pint of mixture is suitable to the average normal infant. Under abnormal conditions it is often necessary to change this proportion,

as, for instance, the amount of cream must be increased in constipation, decreased in diarrhea.

ADDITION OF SUGAR.

To every pint of mixture, that is, milk plus diluent, there should be added two teaspoonfuls of ordinary granulated sugar. This, as a rule, will answer the purpose. Some physicians prefer the milk sugar, a sugar which is naturally contained in the milk (see page 158). Every drug store keeps it, but it is generally very impure and adulterated. If this milk sugar, which is less sweet, is used, twice as much must be taken, that is, four teaspoonfuls to the pint of mixture. Milk sugar makes the bowels loose. It is, therefore, of advantage in constipation, of disadvantage in diarrhea.

Many children, especially those who suffer from chronic diarrhea, and those who are below the normal weight, seem to do eminently better on Rheno's Fattening Sugar. Of this Fattening Sugar the following quantities should be given to a pint of mixture:

Children from 1 to 5 months old.....	4	teaspoonfuls
“ “ 5 to 7 “ “	4½ to 5	“
“ “ 7 to 9 “ “	3½	“
“ “ 9 to 12 “ “	2 to 2½	“

The Fattening Sugar is to be discarded when undiluted milk is given.

By “teaspoonful” is understood a heaping teaspoonful, representing in weight about one-third of an ounce.

The results from this Fattening Sugar are sometimes surprising. Children who would not thrive in spite of all efforts and those who suffered from malnutrition and chronic diarrhea, which seemed incurable, often pick up in the shortest possible time and increase in weight rapidly. Children, however, who suffer from constipation had better not get this sugar

or have one-third to one-half of it substituted by sugar of milk.

HOW TO CHANGE THE CURDLING OF THE MILK.

One open question still remains, namely, what shall we do to cause cow's milk to curdle in as fine flakes as mother's milk does? This can be accomplished by:

(1). DILUTING THE MILK WITH GRUELS OF OATMEAL, BARLEY OR RICE, INSTEAD OF WATER.

The gruels are prepared in the following manner. A heaping tablespoonful of the finely ground substance is mixed with a quart of water and cooked until the quantity has been reduced to a pint. The rest is strained through a fine, clean cloth in order to remove the coarser particles and filled up again to a quart with cooked water. For older children the gruels may be stronger. One to two to three tablespoonfuls can be used if it proves to do well. Towards the end of the first year, some jelly prepared from these meals, given after the feed, is advantageous.

As to the choice to be made between the three cereals, we must say that the oatmeal should generally be preferred. It is most nourishing, its taste seems to be most acceptable to the baby, and it has a slight tendency to keep the bowels open. Where, however, the bowels are already too loose, barley or rice-water should be used instead.

(2) ADDITION OF LIMEWATER.

It is a traditional custom of many mothers to add lime water to the milk, believing that the digestibility of the food is thereby increased. This belief is supported by the observation, made innumerable times, that some children thrive better in every respect with this addition than without it. Also science has of late found an explanation for this undeniable

fact. It has been proved that the addition of lime-water to the milk prevents entirely or retards the formation of curds, according to the quantity added. If clotting results, the flakes are much finer and less tenacious and can be much more easily melted by the juices of the stomach. The addition of lime water works, therefore, in this respect similar to the gruels described in the former chapter.

But while the gruels contain plenty of nourishment and should always be used as a diluent instead of water, lime water contains no food and should not be used except in such cases where the stomach of the nursling can do the work imposed upon it only with difficulty or not at all. The principal symptoms that this is the case are: Vomiting of sour masses, containing firm, tenacious milk-clots, constipation, and white shreds and flakes of casein in the stools (see page 99).

Under ordinary circumstances, therefore, the addition of limewater is unnecessary. If, however, suspicion arises that the stomach of the baby is laboring under too big a load, a trial with lime water is indicated. The proportion is one ounce of lime water to a pint of mixture. Many physicians prescribe Sodium Bicarbonate instead of limewater, in the amount of one grain to each ounce of food, that is, ten grains to ten ounces, twenty grains to twenty ounces, etc. Double doses are seldom required. This may, however, be necessary if the milk is already beginning to sour, which, of course, should not, but will happen. These additions are, therefore, required more often in southern countries and in summer, less often in northern countries and in winter.

(3). ADDITION OF SODIUM CITRATE.

Also the addition of Sodium Citrate has a marked effect in breaking up the solid and tenacious clots into finer particles. It is similar in its action to the

gruels and especially to the lime water and the Sodium Bicarbonate.

The preparation of the food is the same as given above with the difference that to each ounce of milk which goes into the mixture one grain of Sodium Citrate is added. Only in cases of habitual vomiting may the dose be increased to two or even three grains of the remedy to each ounce of milk.

An easy way of getting the proper proportion is to dissolve so much of the salt in four ounces of water that each teaspoonful of the solution contains the amount required for each feed. If, for instance, it takes three ounces of milk for each meal, take three grains of Sodium Citrate to the teaspoonful; if it takes five ounces of milk for each meal, take five grains to the teaspoonful, etc. Four ounces average thirty-two teaspoonfuls. The quantity of salt to be dissolved in four ounces of water is, therefore, so many times thirty-two as ounces of milk go into the mixture at every meal, that is, in the first instance three times thirty-two, that is, 96 grains to the four ounces, and in the second instance five times thirty-two, that is, 160 grains to the four ounces.

The required amount had best be added immediately before feeding.

The addition of Sodium Citrate is of particular benefit in cases where sour, tough clots of milk are vomited, or white flakes of casein appear in the stools (see page 99). It is, however, worth while trying also in cases of dyspepsia and indigestion without the above named symptoms, and furthermore in cases where babies do not thrive and are undersized and underweight. The effect must be watched with the scales (see pages 77 to 81).

If improvement is established the amount of Sodium Citrate had better be reduced gradually; it can, however, profitably be increased again, should signs of indigestion recur.

PREPARATION OF THE BABY-FOOD IN SHORT OUTLINES.

In order to facilitate the practical application of the foregoing lessons, we will repeat here in short outlines how to proceed in preparing the nourishment for the baby..

The gruel, made either of oatmeal, barley or rice according to the needs of the baby, should be prepared first and to this added the necessary amount of sugar. The milk, as soon as it is delivered, should be diluted with the gruel in the proper proportion, the cream added, the mixture be divided in bottles and placed on ice, either raw or after pasteurization or sterilization according to circumstances.

Before using the milk, the bottle is set in warm water and given to the child after the contents have the proper temperature.

It is most practical to prepare the food for the whole day at once. If the necessary precautions are taken, spoiling of the milk need not be feared.

CHAPTER XXII.

CHANGES IN THE COMPOSITION OF THE NOURISHMENT NECESSITATED BY DISTURBANCES OF DIGESTION.

The following survey may serve as a guide in deciding what changes must be made in the composition of the food if disturbances of nutrition arise.

NOURISHMENT IS TOO MUCH DILUTED.

The child does not sufficiently increase in weight, although disturbances of digestion are apparently absent, that is, although the stools have a normal appearance and a normal odor.

Treatment: More concentrated food.

NOURISHMENT IS TOO CONCENTRATED.

White flakes of casein are in the stools (see page 99); colics exist in most instances; diarrhea is seldom, constipation very frequent. Stools smell foul and offensive.

Treatment: Food less concentrated, less in quantity and less often.

PERCENTAGE OF FAT IS TOO HIGH.

Frequent sour vomiting, diarrhea often, constipation seldom. Stools smell rancid-sour, like spoiled butter, containing sometimes white flakes consisting of fat (see page 99). Child is often very nervous and, in rare instances, has cramps.

Treatment: Less cream. It is sometimes necessary to withdraw the cream entirely, yes, to omit the milk for a while and to feed either buttermilk (see later) or nothing but barley, or rice gruel, or, if the diarrhea is strong, best, Rheno's Fattening Sugar.

PERCENTAGE OF FAT IS TOO LOW.

Weight of child is too low, bowels are constipated, stools without extra bad smell.

Treatment: More cream.

PERCENTAGE OF SUGAR IS TOO HIGH.

Stools thin, green, smelling strongly fresh-sour, not rancid sour like spoiled butter.

Treatment: Less sugar, especially no milk sugar. Rheno's Fattening Sugar preferable.

PERCENTAGE OF SUGAR IS TOO LOW.

Child seems normal, but does not sufficiently increase in weight. Bowels somewhat constipated.

Treatment: More sugar.

It may sometimes prove a little difficult to interpret correctly these many different symptoms. We will, therefore, lend a helping hand and outline how a mother should proceed if trouble arises.

However, before we enter upon the subject of how to change the nourishment, be it emphasized that all efforts to improve digestion fail in many instances because the surroundings of the child are unhygienic. Disturbances of nutrition of the most varied kind may exist without the food being at fault. Unhealthy environment, want of fresh air, damp dwellings, etc., may spoil the results of the best feeding. These faulty conditions are by no means to be found only in the house of the poor, who cannot afford to offer the child all that it needs; they also exist in the house of the rich, who, overanxious in his care and from sheer fear that he might harm, denies the child what its body needs.

Therefore, before a mother proceeds to change the food, she should ask herself if the child is properly taken care of, if it has a sufficient amount of fresh air, if the air of the nursery is clean and suited to the needs of the child as to temperature and humidity, if the child has sufficient rest and sleep, if it receives its nourishment at the proper time and in the

proper quantity if it is not overfed, if the milk is pure and unadulterated, if the cow from which the milk comes is properly fed, housed and treated, etc. These and a many other questions must first be answered; and they can be answered if the preceding chapters of this book have been carefully studied and digested.

If in one of these points a mistake has been made, it must be corrected before the food is changed, since therein may lie the cause of the trouble. But, if after careful investigation and reflection, it is found that the child has been properly cared for, or if after the correction of the detected fault no improvement follows, the mother is justified in trying to modify the food.

The first change to be taken into consideration is in the quantity of nourishment, since in most instances of digestive disturbance the trouble lies in a "too much". Many mothers, we know, can only be convinced with difficulty that this is true. They believe it to be the only salvation for their non-thriving babies to have their stomachs stuffed with food as nutritious and as much as possible. Nothing worse, of course, can be done. If the digestive organs are habitually overloaded, they break down just as sure as a horse will which is constantly overworked and gets insufficient rest.

The "too much" is generally a too much in quantity, the food being given too plentifully at a time or too often. In other cases, however, the quantity at each feeding and the number of feeds are right, but there is a "too much" of one of the ingredients, mostly casein, more seldom fat and still more seldom sugar. This happens the easier, the weaker the bowels are. If, therefore, digestive disturbances arise, such as diarrhea, belching, vomiting, colic, foul smell of the stools, etc., under which circumstances the digestive power is almost always impaired, the

food should be adapted to the diminished power of digestion, that is, the food should be more diluted.

If the child fares better, the diluted nourishment should be continued until digestion is perfectly normal. Then, and not until then, can the strength of the mixture gradually be increased. If, in spite of the greater dilution of the food, the digestive disturbances continue, if habitual vomiting of big, tenacious milk-clots exists and the stools are badly digested, an addition of limewater (see page 184) or, better, Sodium Citrate (see page 185) should be tried. If this also fails to help, the quantity of milk in the food must be still more reduced, yes, the milk must eventually be omitted entirely and only gruels be fed, barley or rice gruel in case of diarrhea and oatmeal gruel in case of constipation. But since gruels alone will not suffice to support the body of the child for a greater length of time, it is necessary to return to milk as soon as Nature allows. In order to counteract the loss of weight which invariably follows if the milk is entirely withdrawn, an addition of Rheno's Fattening Sugar is very beneficial (for quantity see page 183), except in those cases where constipation exists.

If again and again on return to milk the child begins to vomit or its stools grow worse, the milk should be substituted by another food.

The first to be tried under such circumstances is buttermilk, either with or without the addition of Sodium Carbonate (see chapter on "Buttermilk"). This, in most instances, removes the trouble.

If, as it seldom happens, the buttermilk does not answer the purpose, or if after an initial improvement the condition grows worse, or if a good and fresh buttermilk cannot be obtained, whey should be tried or peptonized milk or kefir or malted foods or an addition of one teaspoonful to one tablespoonful of fresh meat-juice to the gruels. Also an addition of

a little meat soup is sometimes beneficial, if the bowels are not too loose.

The preparation of all these different kinds of nourishment can be found in a later chapter.

It depends upon the condition of the stools what should be tried first. If their odor is offensive and foul, or if they are mixed with white flakes of cheesy substance (see pages 99 and 188), indicating that the food contained too much casein, gruels do best for the beginning, either clear or mixed with a little cream as explained in the chapter on buttermilk. After improvement began, first peptonized and afterwards plain milk in gradually increasing quantities should be given.

If the stools have a fatty appearance, contain white flakes consisting of fat (see page 99) and have a sour-rancid smell, indicating that the food contains too much fat, buttermilk without the addition of cream may be tried. If this fails, gruels with the addition of meat-juice or meat-soups are advised. Peptonized or skimmed milk with an addition of Rheno's Fattening Sugar in diarrhea or milk sugar in constipation is used for bridging over to the ordinary food.

If the stools are sour, but neither rancid nor foul in smell, and are very thin and greenish, indicating an excess of sugar, starch, or flour in the former food, very diluted milk with a proportion of cream somewhat greater than usual, or peptonized milk, or kefir, or kumyss should be given and, as soon as improvement is established, the child gradually be returned to the ordinary milk-food.

With special emphasis it must be added that under no circumstances should babyfoods that contain large amounts of unconverted starch (see "Proprietary Foods") be given to babies under six months of age. They are, however, suitable as thin soups for infants over six months of age suffering from de-

rangements of the bowels, caused by an excess of fat.

Whatever the child is fed, with whatever it may have been tided over the critical period, it is always necessary to return to milk as soon as conditions allow. But carefully, very carefully should it be done. In tablespoonful, yes teaspoonful, doses the milk must be added, groping along until it has been found that the tolerance of the child for milk has been re-established, that is, that the improvement is so far advanced as to enable it to digest again this, its principal food.

How often the nourishment should be given, when disturbances of nutrition prevail, depends upon conditions. As a rule, it is best to keep the same intervals as advised for healthy infants (see page 145). If but very little nourishment is taken at each meal, food can be given oftener, if necessary as often as every two hours, even with older children. No mother, however, should make the mistake of feeding her darling all the time. The sick stomach requires rest for recuperation, requires it more than a healthy one. But rest is impossible if no time is granted.

During the entire time of the disturbance, the scales (see page 78) should be used regularly and the thermometer (see page 91) also not be forgotten; the scales because they point out promptly either progress or regress, that is, if the nourishment suits or does not suit; the thermometer because it draws attention to certain dangers. For it may happen that, in consequence of the diminished appetite, the child takes too little fluid, or that too much fluid is wasted from the body through thin and frequent passages. Both causes lead to the same effect, namely, the blood grows too thick, the products of decomposition accumulate in the body and poison the vital organs. The result is danger for life or death. Harm can be avoided by the frequent use of the thermometer. If danger threatens, the temperature rises, but goes quickly

down again as soon as water is administered plentifully.

The child should, therefore, during such times of stress be often allowed to drink small quantities of fluids, either of light tea or boiled water. The more irritable the stomach, the less must be given at a time. Harm cannot be done so long as the doses are sufficiently small and the stomach retains without trouble what is offered. Instructions as to the treatment of acute intestinal indigestion and vomiting are given in a later chapter.

If a child has gradually been returned to milk, it depends upon the condition of the digestion how the addition of cream and sugar should be regulated. The proportions given on pages 182 and 183 will usually be right. Deviations, if necessary, are required either by too soft or too hard consistency of the passage. Details as to these matters are found in the chapters on "Chronic Diarrhea" or "Constipation."

To some mothers these instructions may perhaps seem rather complicated and difficult to follow. This is, however, not the case. The mother who learns to observe, to think and to interpret the different symptom does not fare worse than the physician who, following the same general principles, uses his best judgment and "tries." No mortal, not even the most learned professor, can say in advance with certainty in every case what will suit best. The only advantage which an experienced physician has over the mother is that in doubtful cases a chemical analysis of the passage will give him pointers which a mother will not be able to find.

CHAPTER XXIII.

NUMBER, INTERVALS AND QUANTITY OF FEEDS.

Number, intervals and quantity of feeds are exactly the same as with nurslings. All that is required to know can be learned from the table on page 147.

As to the quantity of nourishment which, as stated on page 146 regulates itself with nursing babies, the mother must be guided by experience. Beginning with the amount given on page 147, she soon sees how much is needed. If the baby is not satisfied with the contents of the bottle, it should have a little more the next time. If it does not empty the bottle, it should have a little less the next time. Under no consideration should leavings of milk be saved for the next meal. What the child does not drink must be thrown away. A mother can make no more serious mistake than to fill the bottle up to the top and allow the child to drink whenever it pleases. This bad habit, to which so many imprudent mothers still cling, cannot be condemned too strongly. We caution urgently against it. It is a custom which has, and still does, cost the life of many children.

HOW TO FEED THE BABY.

While feeding the baby the mother should hold the bottle in her hand until the child has finished. Never should she allow herself to carelessly lay the bottle upon the pillow beside the child, while she is continuing her housework. Manyfold are the disadvantages. The meal is frequently interrupted, the time of feeding lengthened and the normal process of digestion disturbed.

CHAPTER XXIV.

SELECTION OF NURSING BOTTLES AND NIPPLES.

Any number of nursing bottles and nipples are on the market. Some are good, some are bad. A few hints are, therefore, not amiss to help the mother in her selection.

BOTTLES—Of the nursing bottles only those are practical which have a graduation blow into the glass, so that at any time it can be seen without meas-



Figure 44. Shape of bottle which should not be used.

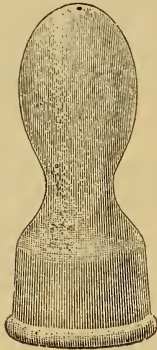


Figure 45. Best form of Nipple.



Figure 46. Nursing Bottle Fitting which should not be used.

uring how much is in the bottle and how much has been taken by the baby. The shape of the bottle makes no difference so long as it can be cleaned easily. A bottle with a curved neck, as shown in Fig. 44, is, therefore, not recommendable; the brush has no ready access to all parts of its interior.

NIPPLES—Only those nipples should be used

which are pulled over the neck of the bottle (see Fig. 45). Those shown in Fig. 46 must be condemned strongly. It is impossible to keep them thoroughly clean. They are positively dangerous, so dangerous that in some European states their sale is prohibited by law.

But also those nipples which have been recommended must meet certain requirements in order to fulfill their purpose.

In the first place, they should be made of the very best rubber, to stand repeated boiling.

In the second place, the hole or holes should be sufficiently small.

The reason is this: The strong development of those muscles in the cheeks of the new-born which are used for sucking bears witness to the fact that already as a nursling the human being has to begin to earn his food under exertions of the body. "In the sweat of thy face shalt thou eat bread," says the Bible meaning also the infant, and this for its benefit. Threefold are the advantages. The efforts required at nursing prevent the milk from flowing too freely and quickly into the mouth of the baby and from overfilling the stomach; they further promote digestion and, last but not least, cause the infant to fall into a peaceful slumber, often before its lips leave the nipple of the breast.

These provisions of nature must be duplicated as closely as possible if the best results of artificial feeding shall be obtained.

How different, however, are the conditions if the hole in the nipple is too big. Even without pulling, or, at any rate, with the slightest effort, the milk pours out of the bottle. The nursling is forced to swallow hurriedly in order to keep up with the flow. The fatigue, which is so indispensable for the promotion of sleep, is wanting; the stomach, overfilled in a few minutes, cannot cope with the burden; the child feels

uncomfortable, cannot sleep, is restless and cries. Digestion becomes impaired and serious disturbances follow if the mother does not recognize the cause of the trouble and remedy the fault.

It is, therefore, necessary to select a nipple with a hole so narrow that it costs the child some effort to withdraw the milk from the bottle. A test can be made by turning the bottle upside down. If the milk but trickles out, the nipple is all right; if it comes in a stream, the nipple is useless. In consequence of usage the hole enlarges after some time in every nipple. It is, therefore, necessary to exchange nipples frequently, about every one or two weeks.

COLLAPSING OF THE NIPPLES.

Every mother who has had the misfortune of being compelled to bring up one or more children on the bottle is, no doubt, acquainted with the disturbances caused by the collapsing of the nipple. The conduct of the child is well known. It begins to suck. The milk comes in the beginning easily, too easily. After a few draughts it comes harder, then still harder, and finally not at all. The nipple collapses and in consequence the bottle refuses to work. After some further fruitless attempts the child gives up its efforts. Indignant at the disturbance, it opens the mouth for crying. At once the air shoots through the mouth of the baby and through the nipple into the bottle. Again the milk begins to flow, but again the bottle fails, etc.

The collapsing of the nipple is no fault of the latter, but is the inevitable consequence of a physical law which tries to balance the pressure inside and outside of the bottle. The process is this: If a part of the milk is withdrawn, the air in the bottle above the milk is thinned, since it has to occupy a larger space. The consequence is that there begins a suction toward the interior of the bottle. To explain this phenomenon let us take the example of a common glass syringe.

If its point is dipped into water and the piston pulled up, the fluid rises immediately into the barrel of the syringe. It does this because the raising of the piston creates an air-free space in the barrel. An air-free space, however, causes a strong suction toward the place the air is missing, in this case toward the barrel of the syringe. The same holds true with the nursing bottle. In the beginning, of course, the rarification of air, that is, the thinning out of air and with it the suction, is but slight in this instance. The more milk, however, is withdrawn, the more will the air in the bottle above the milk be thinned; the more the air is thinned, the stronger grows the suction; the stronger the suction grows, the slower flows the milk and the more effort does it require to withdraw a further amount of milk. If, finally, the air gets thinned too much, the suction gets so strong that the soft nipple cannot withstand it and collapses. As soon, however, as air is admitted into the bottle and the pressure within and without is balanced, the nipple unfolds and the milk flows anew.

So we find conditions with the ordinary nursing bottle. Its disadvantages are numerous:

First, the collapsing of the nipple is an inconvenience to the mother and a disadvantage to the child, as it interrupts the feeding.

Second, the admission of air through the mouth of the child is not without danger. Frequently a part of it is swallowed, hinders digestion and causes colics.

Third, the great oscillations in the efforts required to withdraw the milk from the bottle are harmful. In order to understand this point better let us investigate the process of nursing somewhat closer. If a child takes the nipple and begins to nurse, one can observe that, under normal conditions, it requires a certain amount of effort to withdraw the milk from the breast. This amount of effort is always the same. It is increased but slightly at the end of the

nursing, when the breast begins to grow empty. At no time does the milk flow out of a normal breast so easily that it requires no effort to withdraw it and at no time does it come so hard that the child needs all its strength to reach it.

The process of feeding with an ordinary nursing bottle is entirely different. The first draughts come easily. The milk pours from the bottle into the mouth of the baby. Then it comes harder and harder and finally fails entirely in spite of strenuous efforts.

We see from this that feeding with an ordinary nursing bottle is far from corresponding to the conditions in nature. It is a cliff on which the success of many cases of hand-feeding has been and will still be wrecked. For not only a proper composition, but also a proper administration of the food, is required to bring about happy results in artificial feeding.

Different ways have been tried to solve the problem. As a result many kinds of nipples and nursing bottles have been placed upon the market. But all have failed to be to the point, most of them because they did not attack the root of the evil, that is, the rarification of air in the bottle. Of late a very simple device has been invented which works admirably in overcoming the difficulty. It is a groove in the neck of the bottle as shown in Fig. 47. The advantages gained thereby are as follows:

First, the collapsing of the nipple is impossible, since air enters the bottle in a continual stream as fast as the milk is withdrawn.

Second, the air does not enter the mouth of the child; it can, therefore, not be swallowed and cause wind colic.

Third, the admission of air can be regulated in such a manner that the milk flows easily or hard as one wishes.

This is a very important feature for the following reason: The strength of children is not always

the same; some are vigorous and others weak. According to their strength the milk should flow. If the milk comes easily, healthy and strong children will swallow too quickly and face all the inconveniences and dangers which a too hasty swallowing and an over-filled stomach bring about (see page 197). If the milk comes hard, weak and debilitated children do not get sufficient food or exhaust their strength beyond the normal and healthy limit. The regulation

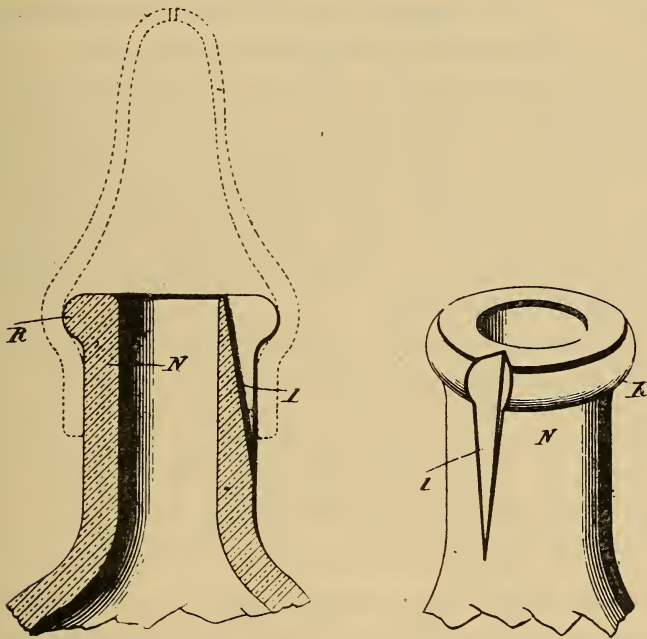


Figure 47. Shows the groove in the neck of the bottle for the admission of air. (R) rim. (N) neck. (I) groove.

of the flow of the milk is, therefore, an indispensable requisite in order to make a nursing bottle suitable to all children alike, to the strong and to the weak, to the healthy and to the sick.

Fourth, the efforts necessary to withdraw the milk are always the same, exactly as on mother's breast.

Fifth, the device is neither difficult to understand nor to handle; it is easy to clean and cannot be put out of order.

The bottle provided with this groove is sold under the name of "Tearless Nurser."

When using this bottle the mother proceeds as follows:

The nipple is pulled over the neck of the bottle so far that the end of the groove is just visible under the rubber. In this manner the air finds the greatest possible resistance in entering the bottle. As a consequence it requires some effort to withdraw the milk. If the nipple is pressed a little bit further toward the mouth of the bottle, the groove opens wider, and in consequence the air enters easier and the milk flows freer. Care, however, must be taken not to open the groove too wide, as the milk, under such circumstances, will leak out. This never happens if the bottle is handled properly.

It remains now to explain how far the groove should be opened. This, of course, is different, as we have stated before, with vigorous and with weak children and even with the same child according to the state of its health. But in spite of these variations it can easily be established. In order to find some guiding points it is necessary to return once more to the infant on the breast. If a nursling is observed drinking on a normal breast, it will be noticed that he swallows after pulling two or three times and that it takes him ten to fifteen minutes to finish his meal (see page 147). These conditions should be imitated in feeding with the bottle. The nipple must, therefore, be placed over the neck of the bottle so far that the child pulls two or three times before it swallows and that it needs ten to fifteen minutes to empty the bottle. Much experience is not necessary. Any mother will soon find out how to manipulate the nipple. With strong babies, it is best, as a rule, to close

the groove as much as possible, so that the nipple is just prevented from collapsing. With very weak children, it is necessary not only to open the groove as wide as is allowed without leakage, but also to make the hole in the nipple larger. If this is done, it is possible to make the milk flow out of the bottle almost as easily as out of a spoon.

No other bottle should be used. The advantages offered by the "Tearless Nurser" are so many that no mother can afford to be without it.

CLEANING OF BOTTLES AND NIPPLES.

The greatest care must be taken that bottles and nipples are thoroughly cleaned after each feeding. The well-being of the child depends to a large extent on the thoroughness with which this is done.

If the child is through with the bottle, the rest of the milk, if there be any, must be thrown away. Then the nipple should be turned inside out and together with the bottle be carefully cleaned with a brush in boiled water. To allow the nipple and bottle to lie or stand around after the meal is finished, is to invite danger of even the death of the child. Particles of milk, when dry, cling very tightly to the rubber or the glass and are difficult to remove. The smallest bit, however, if decomposed is liable to infect the milk of the next meal and to cause a serious digestive disturbance.

When both nipple and bottle are clean, they should be placed and kept in a 1 per cent solution of washing soda (one heaping teaspoonful to the quart of water) and boiled in same once a day.

The soda is strongly disinfecting and besides dissolves all and every remnant of milk, should one be left, so that the bottle is in perfect condition as soon as the soda is carefully removed with boiled water.

It is best to have a number of nipples and bottles at hand and to use them in rotation.

CHAPTER XXV.

OTHER SUBSTITUTES FOR MOTHER'S MILK.

GOAT'S MILK—Goat's milk has been used as a substitute for mother's milk in a number of instances. It agreed well with most children, but, as it has no advantage over cow's milk, it is not necessary to dwell upon it any longer. Should goat's milk be more accessible than cow's milk, it may be tried. It is prepared in exactly the same manner as cow's milk, but the dilution does not need to be so strong. Goat's milk has a peculiar, somewhat sour taste and is refused by many babies.

ASS'S MILK—Ass's milk comes in its composition nearest to mother's milk. Experiments with a great number of children have demonstrated the fact that they thrive well on it. It is best given the way it comes from the animal, undiluted and raw. It cannot be cooked as it curdles upon heating. No hesitation need be felt in feeding it thus, as the ass is not subjected to so many diseases as the cow is and, above all, is free from tuberculosis.

If ass's milk is obtainable, it should be given preference over cow's milk.

MARE'S MILK—Mare's milk also is an excellent substitute for mother's milk. It, too, should be given undiluted and raw. Children seem to like it and seldom refuse it. The number and quantity of feeds are the same as with cow's milk.

CONDENSED MILK—Condensed milk is the most common substitute for mother's milk. This is not because it is best, but because it is easiest accessible and cheap. Its use, however, is not recommendable. Some children, it is true, seem to thrive well on it. They are plump and fat. But all is not gold

that glitters. Observations on large numbers of children have proved the fact that infants brought up on condensed milk suffer very frequently from malnutrition, digestive disturbances, anemia, and above all from Rickets or English Disease. In spite of their full and round cheeks and forms, they are pale, suffer alternately from diarrhea and constipation, get their teeth late, are slow in learning to walk, etc. But, above all, it is noteworthy that their number dying from acute febrile diseases, such as pneumonia, diphtheria, scarlet fever, etc., is appalling. If epidemics arise, death, with unfailing certainty, picks out first those babies that are brought up on condensed milk; a sure sign that, notwithstanding the plumpness, the vitality is low.

Condensed milk is, therefore, not recommendable as food for infants. It has many disadvantages, but no advantage over cow's milk. Of course, a good condensed milk is preferable to a bad fresh milk and finds its proper place where fresh cow's milk cannot be had or only in a doubtful condition.

BUTTERMILK—Buttermilk, as infant food, is to be prepared in the following manner: One tablespoonful of rice meal or, if this is not obtainable, wheat flour is rubbed with a little buttermilk to a smooth paste. With this is mixed two to three tablespoonfuls of sugar, and buttermilk slowly added sufficient to make a quart. The whole is placed upon the fire and, while being continually stirred, is cooked for ten to fifteen minutes. Then the mixture is taken off from the fire and a full point of a knife full of fresh butter added. Now the food is ready. It is stirred thoroughly once more, divided into bottles, cooled and placed on ice. To the child it is given in the same manner as the ordinary food.

By buttermilk we understand that fluid which is left from the sour cream after churning. It is, if fresh, pleasantly sour.

Buttermilk has proved to be an excellent food for both healthy and sick children. It is surprising how well it is borne in cases of dyspepsia and summer diarrhea, after the digestive organs have been cleansed with Calomel and rested a day or two on a diet of water (see "Acute Indigestion"). In a great number of cases of chronic catarrh of the stomach and bowels it has been life-saving. Without the use of additional remedies the disease disappeared. The stools resumed a normal appearance, their foul smell passed away and the children became bright and lively.

Buttermilk has also done splendidly as an additional food for nursing babies that did not thrive on the breast and suffered from constipation and colics. More detailed instructions as to this point will be found in the chapter on "Constipation."

But notwithstanding the great services it renders, buttermilk has not done well in all cases. A number of children did not like it at first, but became used to it very soon; others vomited it in the beginning, a disturbance which, however, also soon disappeared. Again others suffered from constipation, and some children who improved beautifully in the beginning, increased in weight rapidly and had a good digestion, lost their appetite after five to six weeks, became stationary or even decreased in their weight.

In order to remedy these drawbacks and make the buttermilk more digestible, an addition of three-quarters drachm of Sodium Carbonate to the quart of food has been tried and found advantageous in many cases.

Prescription 55.

Sodium Carbonate	1½ ounces
Distilled Water	4 ounces
Two teaspoonfuls of this solution contain ¾ drachm of Sodium Carbonate.	

If this addition is made, a somewhat different preparation of the food is necessitated. Instead of a full tablespoonful of flour, one-half or three-quarters is

sufficient, and instead of two or three tablespoonfuls of sugar, only one is required. The Sodium Carbonate, dissolved in water, should not be added to the paste made of buttermilk, flour and sugar, but to the full quart of the mixture and be followed by four to seven ounces of a 16 per cent cream (see page 182), the quantity to be chosen according to the condition of the bowels (see page 188). The mixture is now finished. It is placed upon the fire and, while being stirred continually, is brought to a boil. Then it is taken off from the stove, stirred for five to ten minutes longer, filled into bottles, cooled and placed on ice.

The Sodium Carbonate takes the acid out of the buttermilk and improves its digestibility. Taste and odor are also bettered. Vomiting is rare, the bowels are more regular and fewer cases fail after thriving for a while.

As it was intimated in different places in this book, there are instances in which buttermilk does not agree with the babies. These latter were, as a rule, previously fed on food too rich in unconverted starch or casein and suffered from thin, green passages mixed with flakes and shreds.

Under these circumstances a food rich in fat is necessary. If, therefore, buttermilk fails, a trial with the gruels, described on page 184, enriched with cream, is indicated. This latter is added to the food at first in tea or tablespoonful doses, but its quantity is increased as it proves beneficial.

Intervals of four hours between the feeds are best if the infant is not too young.

PEPTONIZED MILK—By peptonized milk is understood an artificially digested milk. It is indicated where the stomach is unable to digest the food, as, for instance, in cases of acute and chronic catarrh of the stomach, dyspepsia, etc., if white flakes of undigested milk appear in the stools (see page 99).

Peptonized milk should not be used for a long

time, but only as a temporary relief. As soon as the stomach improves, the child should return to the ordinary nourishment, as otherwise the stomach will lose the power of digesting.

There are different degrees of peptonization:

(a) Partial Peptonization. Partially peptonized milk is prepared as follows: Take one quarter pint of boiled water and mix with three-quarters pint of fresh milk. In the mixture dissolve a powder composed of Pancreatin and Sodium Bicarbonate (Prescription 56). Then heat for ten minutes to a temperature of

Prescription 56.

Pancreatin	5 grains
Sodium Bicarbonate	15 grains

from 100 to 115 degrees Fahrenheit, preferably by preparing the food in a bottle and placing this in water so hot that the hand can just be kept in it. When the ten minutes are over, take the bottle out of the water, cool and place on ice. If ice is not at hand, the milk must be heated quickly to the boiling point in order to destroy the peptonizing ferment, as otherwise the peptonization will continue. Then take from the fire and cool immediately.

Milk partially peptonized in this way is changed in taste but very little or not at all.

(b) Complete Peptonization. The completely peptonized milk is prepared in the same manner as the partially peptonized milk, the only difference is that the bottle is allowed to remain in the warm water from one to two hours instead of ten minutes.

Between these two degrees of peptonization there are a great many intermediate stages, as the milk is peptonized more, the longer the bottle is left in the hot water.

The partially peptonized milk is to be used in slight cases, the completely peptonized milk in cases of complete loss of the digestive power. The latter has a bitter taste and is often rejected, but, after some

opposition at the start, it is soon taken readily by most children.

KEFIR—Kefir is a fermented milk. The fermentation is produced by so-called kefir kernels, composed of fermenting microbes, which are imported from Asia. They digest the casein (see page 158) and the milk sugar. Kefir is a very nutritious food and very easily digested and assimilated. It has a somewhat sour taste and contains carbonic acid gas and a small amount of alcohol in consequence of the fermentation. It is indicated in all cases of weakness, caused by tuberculosis, scrofula, rickets, anemia, etc. In many diseases it is easily borne where other kinds of food are rejected.

On account of its sour taste it is sometimes considered unpalatable at the start. But most children soon become accustomed to it and many prefer it to all other nourishment.

It is generally prescribed for older children and adults, but can also be given to children under one year of age if diluted with an equal amount of water.

If the stomach is very sensitive, it is best to give kefir cold and in small doses, a tea or a tablespoonful every ten to thirty minutes.

Full directions for the preparation of kefir come with the kernels. These latter can be bought in any drug store. Care, however, should be taken to get a good article, as only good kernels will produce a good kefir.

KUMYSS—Kumyss, too, is a fermented milk. The fermentation is, however, in this case not brought about by Kefir kernels, but by ordinary yeast. The mode of preparing is, according to Holt, as follows: "One quart of fresh milk, half an ounce of sugar, two ounces of water, a piece of fresh yeast cake half an inch square; put into wired bottle, keep at a temperature between 60 and 70 degrees Fahren-

heit for one week, shaking five or six times a day, and then put upon ice.”

Kumyss is used for the same ailments as kefir. It differs from the latter only in taste; the changes in the milk are about the same in both instances. Kefir is more pleasant to take and is, therefore, preferred by most people.

Both preparations, kefir and kumyss, deserve a much more general use than they have at present. They are cheap, are not patented, but offer a nourishment which is hardly equaled by any other. On account of their cheapness they are also within reach of people of moderate means.

WHEY—By this term is understood a milk from which all casein (see page 157) and the greatest part of fat has been removed. It still contains all the milk sugar and about 1 per cent of albumen.

How to prepare: Heat a pint of milk, skimmed or unskimmed, up to 100 degrees Fahrenheit; add two teaspoonfuls of Essence of Pepsin (Prescription 57),

Prescription 57.

Essence of Pepsin 4 ounces

or Liquid Rennet (Prescription 58); stir quickly with

Prescription 58.

Liquid Rennet 4 ounces

a spoon and allow the mixture to stand until all casein is curdled. Then break up the cheesy mass into small particles with a fork and strain through a cloth. The clear fluid thus obtained is the whey.

This product is especially recommendable for children whose digestive organs are very weak.

BEEF JUICE—How to prepare: Grind the desired amount of meat, say one-half to one pound, as fine as possible in a meatgrinder. Place in the inner part of an oatmeal steamer, cover and put on stove. Allow the water in the outer vessel to get so warm that the hand can just be held in it, about 120 degrees

Fahrenheit, and keep it so for two to three hours. Then press out the juice.

Two or three times as much juice as with any other method can thus be obtained from the same amount of meat. If the water in the outer vessel gets too hot, the juice coagulates and can no longer be expressed.

Meat juice is a very, very perishable fluid. It must, therefore, be used at once or placed on ice immediately. Without ice it spoils in a few hours.

The child can receive one to two teaspoonfuls of this juice in milk about three times a day where indicated.

The meat juice thus prepared should not be confounded with the extract of beef bought in the drug-store. The former contains an abundance of nourishment, the latter none at all. The extract of beef is nothing but a stimulant and its value is grossly overestimated by the public.

CHAPTER XXVI.

PROPRIETARY FOODS.

The number of these preparations on the market is so great that the attempt to enumerate them all would be idle. Moreover, we consider them as entirely unnecessary for the great majority of infants and for many as harmful. Mothers are too readily induced by the glaring claims of the manufacturers to substitute them for the fresh, pure milk to the greatest disadvantage of their babies.

We will, therefore, dismiss these preparations with a short notice.

The proprietary foods may be divided into two classes. To the first class belong those which do not contain unconverted starch, and to the second class those which do contain unconverted starch, that is, flour.

The infant's ability to digest starch or flour is entirely wanting in the first six months of its life, or, at any rate, so small that it need not be considered. All foods that are made up therefrom, or contain large proportions thereof, are, therefore, prohibited for infants below six months of age. They make such babies sick and are liable to produce chronic digestive disturbances which lead to invalidism and death (see "English Disease").

(A) Proprietary foods with very little or no unconverted starch, which may, if circumstances demand, be given to infants under six months of age.

1. All malted milks, be it Borden's Malted Milk or Horlick's Malted Milk or others.

2. Mellin's Food. This is also almost complete-

ly soluble in water and does not contain any unconverted starch.

(B) Proprietary foods with plenty of unconverted starch, which should not be given to infants under six months of age.

1. Nestle's Food. It contains about 70 per cent of unconverted starch.

2. Imperial Granum and others.

CHAPTER XXVII.

FEEDING AFTER THE FIRST YEAR.

In the second year as well as in the first, the child's nourishment should in the main consist of milk. Not until in the third year can the daily quantity of this food be lessened.

ADDITIONS.

FARINACEOUS FOODS—These, as stated on page 153, should first be given as a substitute for milk. They are a splendid nourishment for children after the sixth to seventh month of age, when the digestive organs have developed the ability to master them. But in spite of their merits they should at first be given sparingly. Children of this age that consume too much of them, or those that begin too early (see page 212), are likely to suffer from dyspepsia, chronic catarrh of the bowels, diarrhea, anemia, rickets, etc.

Of the farinaceous foods, the first ones to come into consideration are those already mentioned on page 153 in the chapter on "Weaning," namely, oatmeal, wheat and barley gruels, bread soups, etc, etc. Oatmeal is the most nourishing and is usually preferred. Bread crusts, crackers, rusk, toast and others can now be given dry, so the children have something to gnaw on.

Allowed are further: Mashed potatoes with plenty of milk and a little butter or, perhaps, with a little gravy, easily digestible puddings of milk and starch flour, farinaceous soups and breakfast foods of the different kinds, etc.

Not allowed are: Rich cakes and pies, freshly baked bread, pancakes, fried potatoes, as well as farinaceous dishes fried with butter or fat.

MEAT AND MEAT SOUPS—Meat and meat soups are generally not considered proper articles of diet during the first year unless specially indicated, as in cases of indigestion, scurvy, rickets, etc., and then only in small quantities.

After the first year, however, meat and meat preparations, given moderately, are conducive to a vigorous development of the child.

Meat is most easily digested if given raw, either chopped very fine or, better, in the form of the meat juice, described on page 210. Of the latter once or twice or three times a day a teaspoonful or two may be given mixed with the other nourishment.

It is also allowable to give children a little meat to chew, advising them to spit out what does not melt.

Not until after the second year are somewhat larger quantities of meat permissible.

VEGETABLES—The beginning with vegetables should not be made until after the middle of the second year. Then are allowed: All cooked green vegetables, such as spinach, peas, green beans, etc. Forbidden are: All fried and raw vegetables, such as lettuce, celery, as well as radishes, onions, cucumbers, etc.

Green vegetables favor the formation of healthy blood and keep the bowels open. But only very moderate quantities should be given until after the second year, when the quantity may be somewhat increased.

EGGS—It is best to give no eggs to children under one year of age. Those in the second year may receive one mixed with their food every day or every second day. Still older children may eat them soft boiled or poached. Fried eggs are not suitable for children.

It is well to feed eggs sparingly, since, fed too frequently, they may lead to digestive disturbances. Besides, it may be said that the amount of nourish-

ment contained in an egg is not by far so large as is generally believed.



FRUIT—Cooked fruit, such as apple, pear, plum-sauce, etc., is suitable for children over one year of age. It is to be recommended particularly in cases where constipation or a tendency to this condition exists. Raw fruit should never be given.

BEVERAGES—The main beverage for children at meals will always be milk. If during the warm weather there is a desire for more fluid, fresh, pure water is best. This should be given freely.

ALCOHOLIC DRINKS—Alcoholic drinks of any form or description are strictly forbidden except where given as medicines.

What was said at the end of the chapter on "Weaning" must here be repeated: Children should not be fed too much at a time or too often. It is always to their detriment to break this rule. Piecing between meals should not be allowed under any consideration. It is a most pernicious habit. Many children suffer from chronic loss of appetite, stomach aches, constipation, etc., because weak parents cannot deny the little beggars the dainties, cakes, etc., they want between the meals. Temperate and well regulated habits in eating are as essential to the sustenance of health as properly regulated intervals of work and rest.

PART III.

 **Disturbances of Nutrition.** 

CHAPTER XXVIII.

We cannot enter here upon all the many diseases of childhood as this does not belong to the scope of our treatise. We will speak only of those deviations from the normal which require proper care rather than remedies, and with which a mother should be acquainted, as it lies in her hands to avoid the serious consequences arising therefrom.

DELICATE INFANTS.

A certain class of infants do not thrive in spite of all efforts of their parents. They are not sick, nor are they well. Their weight does not increase; their muscles are flabby; their skin hangs loose around the limbs and their digestion is unsatisfactory, as disturbances arise continually.

Causes: The causes are different. With some children the trouble is inherited. They come from parents who are not healthy themselves and suffer from consumption, poor blood, and other weakening diseases, especially from syphilis and alcoholism. Syphilitic folks and those who are addicted to drinking are often cursed with delicate children. It is especially pernicious for the offspring if the mother during pregnancy indulges in intoxicating beverages. To these latter belong not only those alcoholic drinks which are known as such, but also a great number of patent medicines which, although made and sold as remedies, are in reality nothing but disguised eye openers and bracers (see page 124).

A further cause lies in the insufficient development of the body on account of premature birth. The organs are not sufficiently prepared for the battle of

life. Although some of these children, if nursed with special devotion, overcome the disadvantages of their birth and grow big and strong, most infants of this class succumb, as can be seen from the mortuary statistics of children prematurely born.

A third cause lies in chronic digestive disturbances, especially when arising in the first months of life. At this time it is of special importance that digestion be good and regular, for it is at this time that the infant lays the foundation for its future health. If, however, the foundation is weak, the structure erected upon it must necessarily be weak also. From this it is clear that even a short period of nursing on mother's breast after birth—mother's milk being the most suitable of all nourishments—is of the greatest benefit to the child, and that every day this nursing period can be lengthened is another solid stone in the structure of the baby's bodily welfare. The digestive disturbances are in some instances caused by an improper composition of either the artificial food or the mother's milk, oftener, however, by the improper administration of the nourishment and overfeeding. We have mentioned this latter point already several times and need not here dwell upon it any longer. We refer to previous pages of this book for further information and advise those mothers who have not as yet realized the enormous importance of this cause of sickness to study it carefully.

A fourth cause lies in the insufficient supply of fresh air, dark, damp and overcrowded dwellings, insufficient care and neglect of the child, or in overzealous nursing, overheated rooms, insufficient ventilation, too warm dressings, etc.

A fifth cause lies in the exhaustion which acute and chronic diseases sometimes leave behind. Many a child that up to the time of the beginning of the ailment was vigorous and healthy withers after it is

over like a cut flower. Its physical strength is lost, its vitality is gone.

Besides these principal causes, there are many others which, either alone or in connection with each other, work in the same direction.

Prevention: Prevention consists in the avoidance of the cause.

Symptoms: With children of inherited debility the weight at birth is usually below the normal, sometimes even as low as four pounds. The skin is cool, the movements of the limbs are slow, the body is held motionless for hours at a time, the strength is so little that sucking sometimes is impossible, the bowels are constipated and the excretion of urine is retarded.

If, however, the physical weakness of the child is not inherited, but develops later in consequence of one or the other cause mentioned above, the first sign of coming trouble is an insufficient increase, standstill or a loss in weight (see page 77). Not until later do other symptoms develop, namely, withered, dry skin, flabby muscles, insufficient increase in height, poverty of blood, swollen glands around the neck and all those different signs which characterize the "English Disease" (see next chapter).

Treatment: The most difficult task in the treatment of delicate infants is the selection and management of the food. The slightest mistake is usually followed by comparatively serious consequences and one attack of indigestion follows another in rapid succession.

If the child is too weak to suck, the milk should be pumped or massaged out of the breast and given thus until the infant is strong enough to nurse. Artificial food, if necessary, should be prepared as described in previous chapters. Two fundamental rules shall be emphasized: First, regularity in the administration of nourishment and avoidance of overfeed-

ing (see pages 144 and 190); second, greater dilution of the nourishment than is required under normal circumstances. To find the degree of dilution, the weight of the child should be taken into consideration rather than its age (see page 181). If the digestive organs are very weak and ordinary cow's milk is not stood, buttermilk or whey or peptonized milk should be tried.

Instructions as to the management of an acute indigestion will follow in a later chapter.

Equal in importance to proper nourishment is proper care. Children weak by birth must be kept very warm for a long period. The lighter the weight and the cooler the skin, the greater must be the supply of warmth. Wrapping in absorbent cotton, warming up with warmed woolen covers, hot water bottles, hot flatirons, hot stones, etc., are used by the poor, while by the rich and in clinics so-called "incubators" are employed, instruments so designed and constructed that any desired temperature can steadily be maintained.

Cleanliness and an abundance of fresh air are indispensable. Special strengthening remedies are usually not required. A properly prepared nourishment, given at the right time and in the right quantity, if well digested and absorbed, invigorates and strengthens the little body better than any artificial preparation. However, if in spite of good digestion the formation of blood is retarded on account of the lack of proper elements for building up, or if digestion is irregular, the cheeks and lips pale, the sleep not refreshing and other signs of impoverished blood be present—a good and reliable tonic must be looked for (see page 125).

Against the English Disease, which sooner or later attacks nearly all of those weak and debilitated infants, all that is said in the following chapter should be heeded.

CHAPTER XXIX.

ENGLISH DISEASE OR RICKETS.

The English Disease, also called Rickets or Rachitis, is a systemic disease, that is, it is a disease which may attack any and all organs of the body, although it affects some of them in a peculiar degree, as, for instance, the bones. This singular change in the bones has given the disease also the name of "Soft Bone Disease." It is, however, by no means the bones alone that suffer. The muscles, sinews, liver, spleen, stomach, bowels, brain and, above all, the blood are also injured, as we shall see in the following description.

Causes: One of the most important causes is the want of fresh air. The disease is, therefore, seldom found in the country, but very frequently in cities, and it comes into evidence principally in the fall and in winter, when children are anxiously kept at home. Want of light and unsanitary, damp dwellings usually co-operate.

A further cause is improper and insufficient nourishment. The disease is, therefore, seldom found with nursing infants, more frequently with those fed on cow's milk and most frequently with babies reared on proprietary foods and especially condensed milk (see page 204).

A third cause is brought about by the weakening influence of acute and chronic diseases. The English Disease follows, therefore, frequently after measles, diphtheria, influenza, etc.

Heredity also is considered a cause for the English Disease, since it often attacks all children of even well-to-do families.

Symptoms: The symptoms of this ailment are manifold and vary according to the place where the disease has settled. Only in far advanced cases are they present in great numbers. But the better the examiner is acquainted with the ailment, the more signs will he find.

GENERAL SYMPTOMS—The English Disease usually develops slowly. The child, previously cheerful and lively, gets uneasy, peevish, nervous and fretful. Its sleep is disturbed and restless. It kicks off the bed clothes, throws its little hands around and rubs the back of the head in the pillows, sometimes so continually and vigorously that the hair is lost by the friction. A bald space on the back of the head of babies is, therefore, a conspicuous sign of the existence of the English Disease. A sign of equal prominence, pointing to the disease, is the sweating of the head. As soon as the child falls asleep, the scalp begins to get wet. Smaller or larger drops appear on the forehead and the pillow becomes damp or even wet from the ooze. A sharp contrast is offered by the body, which is nearly or perfectly dry.

At this time digestive disturbances are usually fully developed. The abdomen is bloated and oftentimes presents the appearance of a barrel, a so-called "Pot-belly" (see Fig. 49). The appetite is wanting. The bowels are irregular, soon too loose, soon too hard, diarrhea changing with constipation. This latter symptom is so characteristic that its presence should always arouse suspicion and suggest a search for further signs of Rickets. Belching and colics are rarely missing.

The weight is stationary or goes back. The former plumpness begins to vanish, the blood grows poor, the skin pale, the muscles flabby. The child refuses to use its limbs in the usual way. The learning of standing and walking is delayed. If the baby has already begun to walk, it gives up again. It wants

to lie down or to be carried and the former desire for playing disappears.



Figure 49. Rickety child, according to Holt.

Everyone of the above symptoms is so characteristic that no mother can fail to recognize the exist-

ence of the English Disease after her attention has been called to them. If her suspicion is aroused, any one or a combination of several of the special signs now following will confirm the diagnosis.

SIGNS ON THE HEAD—On page 82 we have seen that the anterior fontanel is usually closed around the twentieth month. If this is not true after the completion of the second year, it must be taken as a sign of the existence of the disease in question. Under such circumstances the head is often found to be larger than that of healthy children and assumes a somewhat flattened or square form (see Fig. 49 and 51). The back of the head is sensitive to pressure. In consequence children are restless when lying on the back and calm down when taken up or laid on the side, so that the back of the head is relieved. Very characteristic is the erupting of the teeth. With rickety children they come late and irregularly (see "Development of the Teeth" on pages 84 to 86). In some cases the eruption of every tooth takes a very long time. The mother sees the gum bulging, the child is restless, cries much, is fretful and may have slight or serious cramps. All symptoms indicate that the tooth will soon be through. But in spite of this it does not come. Finally the physician is sent for to cut the gum. It is, however, not the toughness of the gum that retains the tooth, but, in consequence of the disease, the tooth has not the push behind it for cutting through. If in such instances the proper treatment is begun, the tooth will soon be through without the use of the knife.

It is necessary, therefore, in all cases in which the teeth come too late, or their eruption is delayed, or the child remains too long on an uneven number of teeth (see page 86), that the mother search for further signs of Rickets and, if she finds such, begin the treatment at once.

SIGNS ON BREAST AND ABDOMEN—At the junction of the bony and the cartilaginous parts of the ribs (Fig. 50), there develop with rickety child-

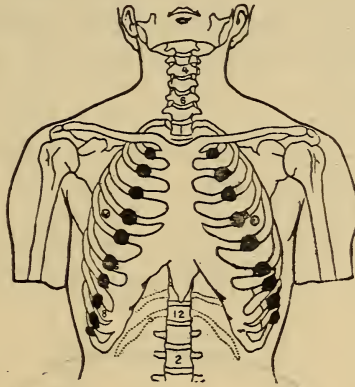


Figure 50. The black dots represent the junction of the bony and the cartilaginous parts of the ribs where the "Rhachitic Rosary" develops.

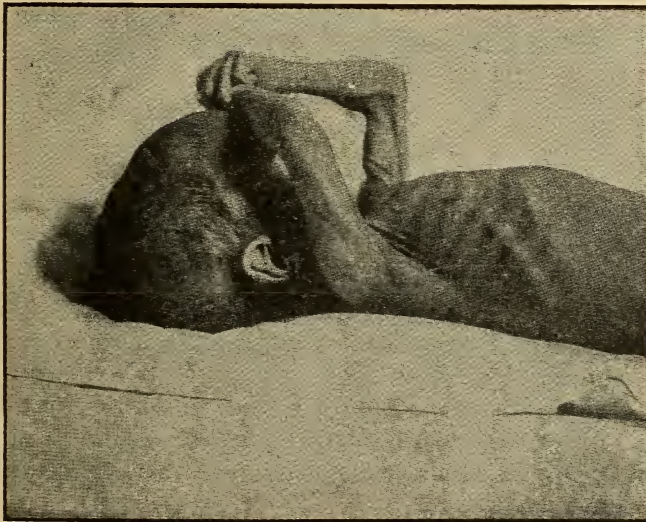


Figure 51. Advanced case of Rickets with well developed "Rhachitic Rosary."

ren nodular swellings. They are easily felt by shifting the skin over these places with the fingers back and forth and, in advanced cases, may even be visible to the eye, as can be seen in figure 51. The string of these swellings or beads is called "Rachitic Rosary." From its existence alone a diagnosis of the English Disease is justified. In still more advanced cases the ribs soften in their entire length. If the mother is in a habit of lifting the child with her hands layed under its arms, the ribs are pressed together by this lateral pressure. By and by they flatten at the sides and grow pointed in the front, developing a so-called "Chickenbreast" (see Fig. 52). The lateral pressure

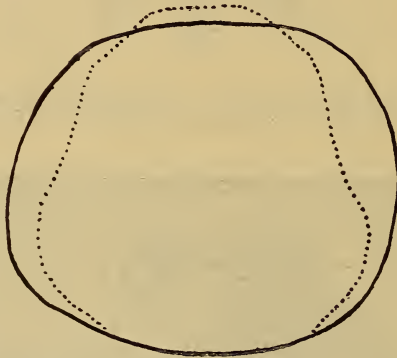


Figure 52. The full line represents the outline of a normal breast, the dotted line that of a rachitic, deformed breast.

on the breast is also painful to babies. They cry, if thus raised, showing their distress, but are usually misunderstood by uninformed mothers, who wonder why the child whines every time it is lifted up. May this hint suffice to explain to our readers this otherwise curious phenomenon and cause them to refrain from lifting their rickety children in the manner above described.

In very neglected cases the spinal column also suffers. The vertebrae become soft, and distortions and curvatures of the most varied kind develop.

SIGNS ON LEGS AND ARMS—The signs on the legs are usually most pronounced if the child is taken ill at a time when it already has begun to walk. The bones, lacking sufficient firmness and hardness, bend under the load of the body. The result is either a bow-leg (Fig. 53) or a knock-knee (Fig. 54).

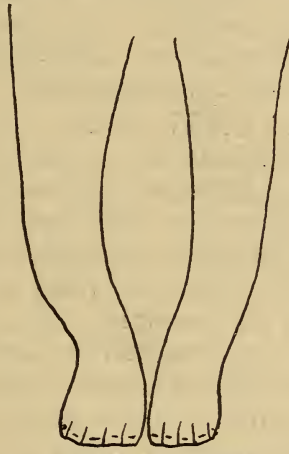


Figure 53. Bow-Legs.

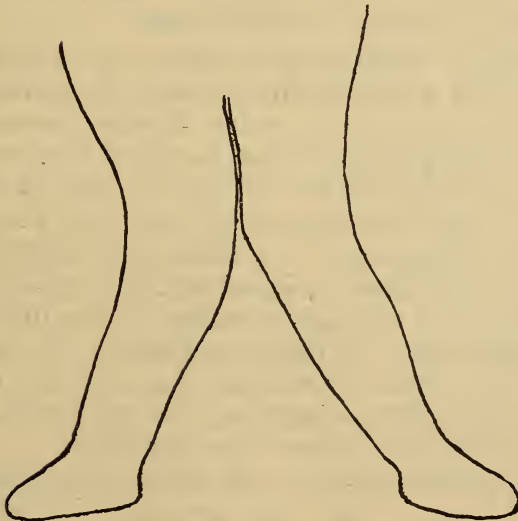


Figure 54. Knock-Knee.

The arms are rarely curved, since they need not carry a load. But also on these are conspicuous signs in advanced cases, namely, the swelling of the bones of the lower arm at their extremities forming the wrist. In Fig. 49 these swellings are easily visible.

Prevention: Abundance of fresh air, well ventilated, dry, light dwellings and proper nourishment, are the chief preventives. Particulars about these will be found in the following lines.

Treatment: CARE. Plenty of fresh, clean air must first be provided for. Nothing worse can be done than to keep afflicted children anxiously at home in overheated rooms for fear they might catch cold. They should be carried or wheeled out whenever the weather permits. The more fresh air, the quicker the recovery. If it be possible, close, dark, and damp rooms should be exchanged for spacious, light, and dry ones. The windows must frequently be opened and the rooms aired. If the parents can defray the expenses, a change from a colder to a warmer climate, from the city to the country, is very recommendable. Sea air is of special curative value.

Rickety children of the more advanced class are best kept in a recumbent position, but should not lie too long in the same posture in order to avoid an unsymmetrical growth of the bones of the head. They should, further, not be carried too long in an upright position, since curvatures of the spine may develop. Also the lifting up of the child with hands layed under the little arms is injurious, as explained before, and may lead to disfigurement of the breast and to the compression of lungs and heart. Finally, children of this class should not be coaxed to stand on their feet until the ailment is nearly cured and the bones are well hardened (see page 83).

Very beneficial are salt baths, given two or three times a week. They are prepared by adding one-quarter to one pound of sea or rock salt to the water

of the bath, according to the age of the child. It is allowed to add still more if it appears to agree. Let the temperature of the water be 90 degrees Fahrenheit and the duration of the bath ten to fifteen minutes. Given at bed time, it will induce a refreshing sleep. If the bath seems to weaken or to exhaust, it should be given less often, with less salt, or be of shorter duration, according to conditions.

DIET—Nursing at the breast of the mother or a wet-nurse is an excellent remedy against the English Disease. Human milk should, therefore, be obtained wherever possible. With older and with hand-fed children, all nourishment made of flour or starch and proprietary foods and especially condensed milk, must strictly be avoided. Good, fresh, rich cow's milk, undiluted or properly mixed according to the age of the baby, is better than any other food. An extra addition of cream after each meal is often very advantageous and well borne in most instances. Whether this latter should be given and how much of it, depends upon the condition of the stomach and the bowels (see page 188). Fresh eggs with children after the first year (see page 215), the yolk of an egg with younger children, furthermore fresh meat juice (see page 210), a little fresh cooked fruit and a few teaspoonfuls of fresh, sweet orange juice, are also very recommendable.

MEDICINES—An easily digestible fat has, in most instances, a very favorable influence upon the disease. For this reason, we have already recommended an extra addition of cream to the meals. Another fat of this kind is cod liver oil, which, by the public at large and also by physicians, is highly praised as an efficient remedy for Rickets. The dose is one to two teaspoonfuls before going to bed. It is usually given one teaspoonful three times a day after meals. We do not approve of this method of administration because in many instances appetite

and digestion suffer thereby. A full dose, that is, one to two teaspoonfuls, given at bed time, is sufficient. Many children take cod liver oil well from the beginning, others take it with reluctance at first, but get used to it very soon, few reject it continually. With those latter an emulsified cod liver oil may be tried. Many emulsions are on the market as proprietary medicines. We do not advise to take them. It is best to have the remedy freshly made according to the formula given in the U. S. Pharmacopoea, where every druggist can find it.

Prescription 59.

Emulsion of Cod Liver Oil with Hypophosphites 4 ounces
 One teaspoonful three times a day after meals.

Extracts of cod liver oil, as they are offered to the public in the daily newspapers, claimed to contain all the curative ingredients of the oil without the fat, are unreliable. The easily digestible fat is that which heals. If this be taken away, the rest is worthless.

The most important remedy in the treatment of the English Disease is Phosphorus. It is considered a specific by physicians. The fact is that it works admirably in most instances. The mode of administration is different. In Germany, it is generally administered dissolved in cod liver oil, according to the formula given in prescription 60. This preparation, however, is very difficult to make and is absolutely re-

Prescription 60.

Phosphorus 1-6 grain
 Cod Liver Oil 3½ ounces
 One teaspoonful twice a day after meals.

fused by many children. American physicians prescribe, therefore, frequently the so-called "Thompson's Solution," made according to the formula given in prescription 61.

Prescription 61.

Phosphorus 1 grain
 Absolute Alcohol 350 minims
 Spirit of Peppermint 10 minims
 Glycerin enough to make 2 ounces
 Six to twelve drops three times a day after meals.

Much easier to make and to take, but good and effective too, is the powder made according to the formula given in prescription 62.

Prescription 62.

Precipitated Calcium Phosphate
Iron Lactate
Sugar of Milk, each1-3 ounce.

An improvement on this latter is the powder sold under the name of Ricketol (Prescription 63).

Prescription 63.

Ricketol1½ ounces

Of both powders, a small quantity is given in the beginning, the quantity being increased gradually until a good sized point of a knifeful, that is, about sixteen to twenty grains, is reached. It is best to administer it in the morning and in the evening, mixed with milk or, better, with oatmeal jelly. The thicker the medium in which it is offered, the easier is it swallowed.

The curative effect of all these remedies is increased by giving at the same time Iro-Tonic (see page 125). Besides a certain amount of phosphorus, it contains an abundance of iron in the most digestible form. This element also is indispensable in the treatment of the English Disease, because most children affected have a poor, watery blood and look pale and sallow. Iro-Tonic alone is, in many instances, sufficient to bring about a cure if supported by the proper care described above. The dose is from one teaspoonful to one-half tablespoonful three times a day before meals, according to the age of the child.

If these recommendations are followed, the efforts will be crowned with success. Patience, however, is necessary. Although improvement begins soon, it often takes considerable time, perhaps many months, until the last traces of the disease have disappeared.

CHAPTER XXX.

ACUTE INDIGESTION.

(CHOLERA INFANTUM, SUMMER DIARRHEA, WINTER DIARRHEA, SUMMER COMPLAINT.)

Causes: This sickness is caused either by overfeeding or by the taking of spoiled or infected food. The latter is more often the case. With smaller children, nearly always the milk must be blamed; with older children, a great variety of other food-stuffs comes also into consideration. Very dangerous is fruit, especially berries and grapes when eaten in an unripe and unclean condition.

The disease is most frequent in summer. At this time the continuous high temperature of the air makes fluid nourishments, such as milk, a hotbed for microbes. It takes but a few hours to convert this otherwise excellent food into veritable poison, if the necessary precautions are neglected (see page 166).

These facts explain why acute indigestion is so much more seldom with nursing infants and such babies as live in the country, where a clean, fresh, wholesome food can easily be obtained, than with hand-fed children and those living in large cities.

If nursing infants are taken ill with acute indigestion, the trouble comes either from unclean water or, more often, from overfeeding. The rests of undigested milk decompose and cause the disease.

Symptoms: The beginning of the disease is sometimes slow, in most cases, however, sudden.

In the first instance, the child grows restless, loses its appetite, becomes feverish, cries, and finally begins to vomit.

In the second instance, the vomiting commences suddenly with high fever after taking spoiled milk or

eating grapes or berries or other unpeeled fruit. It is vehement, exhausting, persistent. Everything, even water, comes back in a moment. Digestion, of course, is impossible. The more unreasonable, yes unpardonable, are the doings of many mothers who, in spite of the persistent vomiting, try again and again to fill the stomach of the infant with milk. Unnecessary work is, thereby, imposed upon this sick organ. For, instead of getting rest, it has to battle not only with the sickness, but also with the imprudence of the mother and is forced to empty again as soon as possible by the act of vomiting what is being stuffed into the child. But not always are mothers able to impose this unnecessary burden upon Nature. Instinct prompts the child to do what is right. It often refuses the injurious milk and takes with avidity the non-injurious water.

The stools, retarded in the beginning, soon get loose, their consistency grows thinner, their number greater. Gradually they become watery. A bad odor is seldom present, except in the beginning. The abdomen, bloated at first, sinks in and is painful to the touch. The opening of the bowels is reddened and sore.

If the inflammation spreads to the lower part of the bowels, that is, to the large intestines, the character of the discharges changes. They grow slimy, bloody and their smell gets foul. The pressing at stool becomes more distressing and is in many cases almost continual and accompanied by pitiful crying.

The fever is very high only in the first days, oscillating between 102 and 105 degrees Fahrenheit. It soon, however, goes down, if no complications arise, especially if the proper treatment is instituted at once.

In consequence of the enormous loss of fluid through the bowels, which is partly only made good by drinking, the blood thickens. The excretion of

the waste of the body is hindered. The weakness becomes great, the skin cool, the tongue dry, the eyes sink in and are surrounded by deep blue-black rings, the nose grows pointed, the voice low and whining, and the hands and feet cold and blue. In a few days, even in a few hours, the formerly blooming child assumes the appearance of an old person.

If the sickness has progressed so far, death will soon follow.

If, however, the case is properly treated and the tide stemmed, the vomiting ceases, the number of stools decreases and the cool limbs grow warmer. In a few days the child resumes its former cheerfulness and, though weak and enfeebled, goes on to convalescence.

In other cases recovery is slow. It proceeds to a certain point and stops. The bowels represent a condition of chronic indigestion, which seems impossible to overcome. The weight of the body does not increase, the strength will not return, the bowels are still somewhat loose, the paleness does not improve, and the solicitous mother needs all the strength, patience, and perseverance of her devoted love to make good the damage brought on by a seemingly small error.

Complications and Sequelae—Of the complications two principally are worthy of note, namely, catarrh of the large intestines and inflammation of the brain. The former has been mentioned above; the latter may still set in when improvement is far advanced. It is very dangerous and leads often to death when recovery seems certain.

The sequelae are of the most varied kind: Chronic indigestion, poverty of blood, rickets, scrofula, tuberculosis, etc.

Prevention: Cleanliness and careful supervision of all foodstuffs, especially in summer, and a close adherence to the directions given in former

chapters as to the quality and quantity of food, are of prime importance. Fruit should not be given to children below one year of age; older ones should have it cooked. Berries and grapes are strictly forbidden, since their outer surface cannot be cleaned.

To quench the thirst in summer, clean, fresh spring water is best. If this cannot be had and the water obtainable is of doubtful character, a weak lemonade, made with cooked water, or a very weak tea are proper substitutes.

Treatment: CARE. Three to four times a day the temperature should be taken with a thermometer (see pages 91 to 97); if it is very high and the skin hot, bathing in cool water will diminish it. The bath can be repeated several times a day, if necessary. However, it is seldom required if Calomel has been used in the beginning of the sickness according to the instructions following later.

So long as fever, vomiting and diarrhea last, the little patient belongs in bed. Hot linseed poultices upon the abdomen will ease the pain in the beginning of the trouble. The head must be kept cool. It should not be covered. In case of high fever, frequent washings with alcohol or the application of rags, dipped in cold water and pressed out again, upon the front part of the head are very refreshing and tend to prevent the inflammation of the brain.

If hands and feet grow cold, a mustard bath should be given, prepared in the following way: Two handfuls of mustard meal are inclosed in a bag and swung around the water for a few minutes, until the latter becomes turbid and yellowish-green. In this the child is placed, allowed to remain for five to eight minutes, taken out again, dried, rubbed down thoroughly all over the body, placed in its bed and surrounded by warm bottles, stones, etc. Let the temperature of the bath water be around 98 degrees

Fahrenheit. If necessary, bathing can be repeated once or twice a day.

Diapers must be taken off as soon as soiled. Before the clean cloth is applied, the child should be washed with freshly boiled, warm water, dried thoroughly and dusted with one of the antiseptic baby powders given on page 54. It is important that dirty napkins be placed immediately in water or, better, in a solution of Rhenolin (Prescription 64) and be boiled as soon as opportunity is offered. The microbes which caused the sickness are contained in the dis-

Prescription 64.

Rhenolin 4 ounces

charges from the bowels and may sicken other children if they become infected.

DIET—The first and most important requisite for a successful treatment of all acute indigestions of the above described type is the withdrawal of all nourishment for one or two days. Without this, no medicine will operate satisfactorily. It may seem terrible to a loving mother to starve the suffering darling. But it is necessary, absolutely necessary, to follow this advice if she wants to save the baby. It shows no sense to stuff the stomach of a child full of nourishment so long as it cannot digest it. The inflamed organs need rest, rest to heal. But how can rest be had for the digestive organs if they are bothered with nourishment? Away, therefore, with all milk, away with all soups and foods! Only one thing can and should be given and that is freshly boiled water, at the temperature the child seems to like it best. It should be given freely. In short intervals it must be offered to the little patient, who generally takes it eagerly, since diarrhea makes thirst. In the beginning, it is allowable to give all the water that is taken, even if it is thrown up again. The copious fluid cleans the stomach and replaces the washing-out, done by physicians. But as soon as the stomach is

clean and the water returns free from all particles of nourishment, the amount of water should be restricted in order to avoid any further strain. Then, a teaspoonful every two to five minutes may suffice for a while. The amount, however, must be increased as soon as the fluid is borne without further irritation.

The administration of plenty of water is of the utmost importance. It reduces the fever and increases the comfort. If an insufficient amount be given, the child must die. The blood grows too thick in consequence of the great loss of fluid through the bowels, the waste products cannot be cast off and accumulate, and life is impossible.

If the weakness is very great, boiled water or a light fennel tea with an addition of whisky or brandy should be given. The dose of the latter is for children from

1 to 14 days.....	10	to 30 drops.....	in 24 hours
14 to 30 days.....	40	to 50 drops.....	“
1 to 2 months.....	1	to 1½ teaspoonfuls	“
2 to 6 “.....	1½	to 2½ “	“
6 to 12 “.....	2½	to 4 “	“
1 to 6 years.....	½	to 1 ounce.....	“

It is best to feed in the beginning out of a spoon and later, when the vomiting has ceased and if the weakness is not too great, out of a bottle (see page 203).

Should water either alone or mixed with brandy be thrown up continually, water with an addition of limewater or Citrate of Sodium may be tried, in the same proportions or a little stronger, as recommended on page 185.

Not until the vomiting ceases for twelve to twenty-four hours and the diarrhea begins to improve, can the first nourishment be given.

Nursing infants receive the breast. They should, however, at first nurse not longer than three minutes and not oftener than every four to five hours. If the

vomiting does not return and the child shows no sign of distress, the time of feeding can gradually be lengthened and the intervals shortened. Oftener than every four hours, the breast should not be given until the sickness is entirely over and normal digestion restored.

Hand-fed children receive as first nourishment freshly prepared rice or barley water (see page 184). Far better, yes admirably, works Rheno's Fattening Sugar in cases where diarrhea still persists (see page 183). Also a thin solution of egg albumen, that is, the white of one egg to one-half to three-quarters of a pint of freshly boiled water with or without the addition of brandy, is often prescribed by physicians and agrees well.

If this nourishment is relished, the time arrives for an addition of fresh, boiled milk or buttermilk, prepared as described on page 205. With very weak children and with those who did not improve considerably as yet, the beginning should not be made too early and very cautiously. The amount of milk must be small at first, perhaps only a few drops. If matters run along smoothly, more can be given. By and by the strength of the mixture and the quantity of food is increased until normal percentages are reached.

Milk or buttermilk, alone or with an addition of cocoa or chocolate, if relished, should remain the only food until stomach and bowels regain their strength. If they are not well borne, the instructions given on pages 191 to 192 will be guiding. Meat soups and oatmeal are forbidden. They increase the diarrhea.

The treatment of chronic diarrhea, which sometimes remains after an acute attack, is given in the following chapter. As to the treatment of a subsequent general weakness and exhaustion or poverty of blood see page 22.

DRUGS—Of all remedies no one has such an excellent effect as Calomel. There are only a few drugs in the whole domain of medicine which achieve such splendid results as this, if applied at the right time and in the right way. It works in many cases like a charm. And yet some laymen who may have seen or heard of some ill by-effects of this drug are opposed to its use, but without justification. It is not the Calomel that harms but the improper management of it. Calomel is insoluble in water and only slightly soluble in the secretions of the stomach and bowels. It is a strong disinfectant, that is, germ killer and a mild laxative. It stimulates liver and kidneys to higher activity and promotes the expulsion of the waste products from our body. All these properties are of highest importance and inestimable value in the battle against disease.

In order to avoid ill by-effects two requisites must be fulfilled:

First, the dose must be large enough to move the bowels. If this is not the case, Calomel remains too long in the intestines. It is dissolved in a larger measure and passes over into the blood. But even then, one dose would do no harm. If, however, the remedy is given too often or in small quantities for a long period uninterruptedly, symptoms of poisoning may develop, such as increased flow of spittle, inflammation of the gums, loosening of the teeth, etc. If administered properly, Calomel does not have sufficient time to be dissolved and to be absorbed. It comes out again with the passage and is perfectly harmless.

Second, it must be given divided into small fractional doses, which follow each other in short but regular intervals. The laxative effect is thereby not diminished, but the disinfecting power increased, since the medicine has a better chance to work upon the microbes which cause the disease.

Powders or pills containing Calomel should, therefore, never be given at long intervals nor for a long period, in order to avoid absorption. If this is done and bad effects follow, the mode of administration, not the remedy, should be blamed.

As stated, all fractional doses, belonging to one treatment, must be given at regular intervals, that is, in one stretch. If the child falls asleep before all are gone, it should be awakened to take the rest. Under such circumstances, an exception must be made from the rule which prescribes that a patient should never be aroused from sleep in order to take medicine or food. It is done in this instance because the proper effect of Calomel is lost if it is given in an improper way.

The dose is for children:

0 to 1 year old..... $\frac{2}{3}$ of a grain divided into 4 powders
1 to 2 years old..... 1 to $1\frac{1}{3}$ grains divided into 6 powders

The entire amount should be given in about two to two and one-half hours. This requires the administration of one-sixth grain of the drug about every one-half hour for smaller children and a little oftener, that is, about every one-quarter to one-half hour for older ones.

If vomiting is persistent, it is advisable to give still smaller doses by dividing the little tablets containing one-sixth of a grain (Prescription 65) into two parts and giving only one of these at a time.

The administration of the remedy is easy. One of the tablets is crushed in a tea or tablespoon with the handle of a knife, reduced to a fine powder, mixed with water and given.

If four to five hours after the last dose of Calomel the bowels do not move, an injection of soap water or a dose of Castor Oil should follow (see chapter on "Constipation") to help along the passage.

Bad by-effects from Calomel are thus impossible. The results, however, are in most instances so splen-

did that we cannot but urge every mother to have the remedy in the house, ready for emergency. It is very cheap and can be had at any drugstore in any desired strength. Tablets containing one-sixth of a grain, as called for in prescription 65, are handiest.

Prescription 65.

Calomel Tablets (1-6 grain)No. 50

They keep indefinitely, if kept in a well corked bottle and guarded against moisture.

With these Calomel tablets the treatment of every case of acute indigestion of infants should begin. The first doses are often vomited. Soon, however, the stomach settles down and keeps the rest. If too many tablets are thrown up, it is necessary to give as many more as have been ejected.

It usually does not take long and the child, restless and crying previously, becomes quiet and begins to sleep; the fever goes down and the diarrhea diminishes.

If no Calomel is at hand, a dose of Castor Oil is best to initiate the treatment.

In many instances, one treatment with Calomel, if given right at the beginning of the trouble, is sufficient to cure the child, provided the nourishment be managed properly.

If, after an initial improvement, the case grows worse, a second treatment with Calomel may be given after two to three days and a third one after four to six days. Castor Oil or an injection must be used, should a laxative be required in the meantime.

In such cases where the Calomel does not prove entirely sufficient, that is, where the diarrhea continues and the bad smell persists, another disinfecting remedy should follow. The best is a solution of Tincture of Iodine and Tincture of Benzoin in alcohol (Prescription 66).

Prescription 66.

Tincture of Iodine 80 minims
Tincture of Benzoin.....1-3 ounce
Alcohol ½ ounce

Of this should be given six times a day one drop to children under one year of age and six times a day two drops to children of from one to two years of age.

The drops are mixed with a suitable amount of water and administered according to convenience, either at one draught or a little at a time.

Instead of the drops, many physicians employ Salol as a disinfectant for the bowels. It is also good, but not quite as efficient.

Its dose is for children :

1 to 6 months old.....	1/2 grain 3 times a day
6 to 12 "	1 " " "
1 to 2 years old.....	2 " " "

Far more efficient than Salol, yes often more efficient than the solution given in prescription 66, are either Magnesium Peroxide or Calcium Peroxide. Both give excellent satisfaction wherever the fever and the foul smell of the passage persist. The first is preferable where the bowels are sluggish, the second where they are still loose.

Prescription 67.

Magnesium Peroxide
Sugar of Milk, each..... 2 grains
One powder four to five times a day.

Prescription 68.

Calcium Peroxide 1 grain
Sugar of Milk 2 grains
One powder four to five times a day.

If the exhaustion be great, the pulse (see page 89) weak, and hands and feet cold, the mustard bath, described on page 237, should be given and internally of the medicine in prescription 69 three times a day two to three drops to children in the first year, four to six drops to children in the second year. So much water must be added to these drops as to render their taste sufficiently mild.

Prescription 69.

Spirit of Peppermint
Spirit of Camphor
Tincture of Capsicum, each 1-3 ounce

As soon as the laxative has done its work and the stools have lost their initial bad odor, indicating that most of the injurious substances have been expelled, checking remedies can be employed to master the diarrhea. For ordinary cases a powder made of Bismuth Subnitrate and Flowers of Sulphur (Prescription 70), given every two hours, will suffice.

Prescription 70.

Bismuth Subnitrate 8 grains
Sublimed Sulphur 5 grains

If it does not and the diarrhea continues, Camphorated Tincture of Opium (Prescription 71) will do the work.

Prescription 71.

Camphorated Tincture of Opium (Paregoric)
..... ½ ounce

Of this can be given to a child:

0 to 1 year old.....4 to 8 drops 3 times a day
1 to 2 “8 to 16 “ “

Opium is a very powerful remedy and should not be given to infants but with the greatest caution. It is best to begin with the smallest amount and increase the dose as necessity seems to demand. As soon as the number of stools has decreased to three or two a day, Opium should be omitted, while the Bismuth powders, which are harmless, can be continued until the bowels are entirely well.

A remedy frequently used by the public is Blackberry Brandy. It, too, is very effective in many cases.

Improper treatment sometimes turns diarrhea quickly over into constipation. If this should happen, an injection (see chapter on “Constipation”) or Castor Oil must be used at once. To wait longer than twenty-four hours for a passage is dangerous. It is also dangerous, very dangerous, to stop the diarrhea before the injurious contents of the bowels have been removed by the use of either Calomel or Castor Oil, or to check the discharges too suddenly. Diarrhea is

Nature's own remedy by which she tries to rid the body of all that is injurious. This endeavor should be supported and not hindered. The diarrhea ought, therefore, not be checked until its purpose, that is, the expulsion of the poisons, has been accomplished. If these latter are retained, they are absorbed into the blood and may cause death.

No injurious consequences follow if the diarrhea stops suddenly after the use of Calomel. Calomel is no constipating remedy; it is a laxative. And yet, it acts often, very often, checking by removing the cause of the diarrhea. This is the most ideal way a remedy can work.

With Opium, however, matters are different. It does not remove the poisons from the body. On the contrary, it keeps them in by quieting the excited bowels. It should, therefore, as said before, not be used until the poisons are out and then only in such doses that the diarrhea is checked gradually and slowly, and opportunity is given to injurious substances still remaining to be expelled. With large doses of this remedy any diarrhea can be stopped immediately, but not without endangering the life of the child.

From this it can be seen, how dangerous consequences may follow the indiscriminate use of so-called "Diarrhea Mixtures," sold as patent medicines, as their working substance is Opium. They have brought and are still bringing every year death to thousands of babies that would have been saved under proper treatment.

Slimy and bloody stools are, as stated above, always a sign that the inflammation has spread to the large intestines and the rectum, that is, to the lowest parts of the bowels. If they occur, the treatment must be changed, since medicines, taken by mouth, have to travel a long distance before they reach the affected membranes and are, as a rule, not very effect-

ive. The best way to proceed against the complication is to make injections.

The instruments, necessary for the purpose, are: A two or four-quart fountain syringe (Fig. 55) and a soft Nelaton catheter No. 14 (Fig. 56).

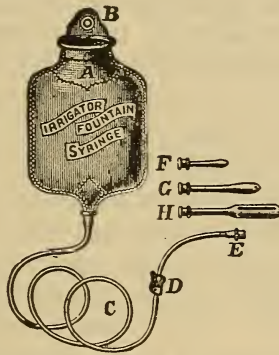


Figure 55—Fountain Syringe. End piece F to be connected with the catheter.



Figure 56—Soft Nelaton Catheter No. 14.

Proceed thus: Fill the bag of the syringe with the water and hang it up on a nail one and one-half to two yards high. Attach to the rubber tube (c) the smallest end piece F, connect with the catheter and place the latter, well greased with vaseline or lard, within easy reach.

Now sit down, place the right foot on a foot-stool and the child on the lap in such a way that its hips lie on the right elevated leg, while its head hangs down over the left, lower leg, which rests on the floor. The legs of the child should be bent in the knees and drawn up to the body. In this position introduce the point of the catheter into the rectum of the child, after a little water has been allowed to flow out in order

to expel the air from the tube. When the catheter has entered about one or two inches, open the stop-cock (D) and allow the water to flow slowly into the bowels, closing the tube from time to time. As soon as one or two ounces are in, push the catheter slowly up into the rectum, rotating the tube, until about one-half of it is in the bowels. Fear need not be entertained that it hurts the child. The continually flowing water presses the walls of the intestines apart and makes room for the point of the instrument, which penetrates without touching the mucous membrane.

As soon as the child begins to press, interrupt at once the flow of the water and wait until the pressing is over. Then allow the water to flow again, interrupt again when the pressing returns, etc., until the bowels are full. This moment is signified by the fact that the pressing is now continual and that the water spurts out aside of the catheter in spite of the seat being pressed together.

Now it is time to stop. Remove the end piece of the syringe from the catheter, place right foot on floor and left foot on footstool, so that the hips of the child are now low and its shoulders high. Then allow the water to return from the bowels through the catheter. While the water is flowing pull the latter out slowly so far that about two inches remain inside. Do not remove it entirely.

As soon as the water is all out, set right foot back upon the footstool, lower left foot to the floor, connect end piece of syringe with the catheter and allow the water to flow again in and out of the bowels in the same manner as described before.

The injections are repeated until the water returns clean, which is generally the case after two or three rinsings. Then, the catheter is entirely removed and the child put to bed.

The position of the legs as described above is very important. The elevation of the right foot, and

with it of the hips of the child, allows the water to flow in easily and high up into the intestines; the elevation of the left foot and with it of the upper part of the child and the lowering the hips, facilitate the return flow of the water.

In order to avoid the spurting out of the water at slight pressing, the seat of the child should be pressed together around the catheter while the water is flowing in.

Salt water is best for rinsing, two drachms of table salt, that is, a slightly heaping teaspoonful, to a quart of freshly boiled water or, if much slime is present, a solution of Bicarbonate of Sodium (Prescription 72), one-half to one teaspoonful to a pint of water. The solution of soda dissolves the slime better than the salt water.

Prescription 72.

Sodium Bicarbonate 2 ounces

Of these solutions about two quarts are filled into the syringe. Let the temperature of the water be 75 degrees Fahrenheit in light cases, a little lower, about 60 to 70 degrees Fahrenheit, in aggravated ones, which are accompanied by high fever.

After the first rinsing the relief soon becomes apparent. The pressing subsides, the passages decrease in number or stop entirely for a shorter or longer time, and the child is eased for hours, perhaps for half a day or a day. If the characteristic stools return, the rinsing must be repeated. Two or three a day can be made, if necessary.

In aggravated cases these rinsings with salt water are not entirely sufficient. As soon as the fluid returns clean, they must be followed by an injection with one of the solutions in prescriptions 73 and 74.

Prescription 73.

Tannic Acid 1 ounce
Distilled Water enough to make..... 2 ounces
One to two teaspoonfuls to a pint of water.

Prescription 74.

Tannic Acid
Zinc Sulphate
Exsiccated Alum, each.....1-3 ounce
Distilled Water enough to make..... 2 ounces
One to two teaspoonfuls to a pint of water.

These latter should remain about one to two minutes in the bowels and then be allowed to flow out completely through the catheter in the same manner as the salt water did.

If very much blood is in the passage, the medicine in prescription 75 is rather preferable.

Prescription 75.

Fluidextract of Hamamelis Leaves.... 2 ounces
One teaspoonful to a pint of water.

Also the addition of gelatine to the water and the drinking of a gelatine solution (see page 12 and the following chapter) is very beneficial under such circumstances.

If, however, a bad odor of the passage indicates that there still exists decomposition and fermentation in the bowels, one of the following disinfecting solutions should be used (Prescriptions 76 and 77).

Prescription 76.

Solution of Aluminum Acetate..... 2 ounces
One and one-half drachms (1-2 tablespoonful)
to a pint of water.

Prescription 77.

Potassium Permanganate 5 grains
Distilled Water 8 ounces
One to two tablespoonfuls to a pint of water.

Should there remain a condition of chronic diarrhea after the acute symptoms are over, a special diet and internal remedies are required. They will be described in the following chapter.

CHAPTER XXXI.

CHRONIC DIARRHEA.

Chronic diarrhea seldom occurs with nursing infants, very frequently, however, with those that are fed by hand. Of 1,943 fatal cases of this disease, which were collected by Hold of New York, only 3 per cent belonged to the first, all others to the second class. In winter, with well-to-do people and in the country, the disease is rare, but in summer, with uneducated and poor people and in cities, it is very frequent.

Causes: The cause lies in a diseased condition of the intestinal canal, brought about by improper nourishment, bad hygienic surroundings, improper care and by acute infectious diseases, such as summer diarrhea, influenza, measles, etc.

With nursing infants, chronic diarrhea may develop if the milk of the mother is too rich in fat; with hand-fed children, if the nourishment is too rich in fat or sugar or additions of unconverted starch (see pages 188 and 189).

Symptoms: Either suddenly or gradually, with or without vomiting, the stools, heretofore normal, grow softer and more frequent in number. Although very thin, they are in the beginning still yellow and smell sour, but change in the course of the next few days, become watery, are mixed with shreds and flakes and have a bad odor. The color is generally greenish-yellow. Their number is two to five to ten a day and their quantity as a rule the smaller, the oftener they come.

Although in the case of an ordinary chronic diarrhea the passages come often, sometimes very often,

they are far from being so weakening and exhausting as in the case of an acute indigestion or cholera infantum. Indeed, it does not seldom happen that children suffer from such a diarrhea for two or three weeks and yet are comparatively well looking, play and do not seem to be very sick. This, of course, is the exception. As a rule they begin to fail soon after the commencement of the disease. They grow thinner, lose their appetite, have pains in the stomach, become restless, cry and complain much, cannot sleep and are fretful. The eyes sink in, dark, deep-blue rings develop around them, cheeks and lips grow pale and the tongue dry. Fever is present in the beginning in most instances; later on the temperature becomes normal or rises slightly in the evening.

In more advanced stages of this ailment, other sicknesses usually develop: Thrush, English Disease, Scrofula and many others. They combine their forces to destroy all that is left of the vitality of the child.

Prevention: Chronic diarrhea can be prevented only if disturbances of digestion are avoided by proper feeding, and if acute diarrhea, summer cholera, etc., are carefully treated. Uncleanliness and dark, damp dwellings assist much in bringing about the trouble. A change of climate is very beneficial. It is, therefore, advisable, if it can be done, to send children who are disposed to diarrhea to the country or, better, to the seashore. Special stress should be laid upon a supply of fresh, pure, clean water to be at hand during the warm season.

Treatment: CARE. The abdomen of a child, suffering from diarrhea, should always be kept carefully warm with a woolen or flannel bandage. Pains are best relieved with hot linseed poultices.

DIET—Nursing infants should receive less food by shortening the time of nursing and lengthening the intervals. If the milk of the mother is too rich in

cream, as it may happen with women who live in luxury and have too little exercise, the fat content can be diminished by observing the rules laid down on page 124.

Hand-fed children under one year of age should have a carefully selected and carefully prepared boiled milk. Raw milk increases the diarrhea. In order to ease the work of the weakened bowels and give them more rest, it is advisable to dilute the milk with barley or rice water (see page 184) twice as much as corresponds to the age of the child.

Cane sugar and especially milk sugar are loosening. They should, therefore, under such circumstances always be substituted by Rheno's Fattening Sugar (see page 183), which itself acts as a check and is at the same time a splendid nourishment to prevent further waste of tissue.

The amount of cream in the milk must be diminished if the passage shows (see page 99) that the fat is not well digested. Sometimes it is best to omit it entirely, or even to give skimmed milk.

Gelatine has proved to be an excellent food and remedy in cases of chronic diarrhea. One and one-half to two drachms are given during the day either as jelly or dissolved in milk (for further information see pages 11 and 12). If it is prepared at home by boiling fresh calf bones and feet, it tastes better and is easier to take. Also cocoa or chocolate, given in milk, act similarly.

If milk is not well borne, or if improvement does not rapidly set in, buttermilk (see page 205) should be tried or Kephir or Kumyss.

MEDICINES—If the passage smells foul, it is best to begin with a dose of Calomel (see page 242) or, if this is not at hand, of Castor Oil. If the bad odor continues, there should follow in all cases in which the bowels are very loose a powder of Calcium Peroxide four or five times a day, one grain to the

dose (Prescription 78) or, in cases where the stools

Prescription 78.

Calcium Peroxide 1 grain
Sugar of Milk..... 2 grains

are not very frequent, a powder of Magnesium Peroxide four or five times a day, two grains to the dose (Prescription 79). Also one of the other disinfectants (see pages 243 to 244) will do if the former cannot be had.

Prescription 79.

Magnesium Peroxide
Sugar of Milk, each 2 grains

Should slime and blood be mixed with the passage, injections are best (see page 247).

If dyspepsia exists (no appetite and characteristic stools, see page 99), Essence of Pepsin (Prescription 80) should be given. The mixture in prescription 81 works better, but is not so easily taken. Its results

Prescription 80.

Essence of Pepsin..... 4 ounces
One-half to one teaspoonful three times a day after meals.

Prescription 81.

Pepsin 15 grains
Glycerin $\frac{3}{4}$ ounce
Diluted Hydrochloric Acid $\frac{3}{4}$ drachm
Distilled Water enough to make..... 2 ounces
Ten to twenty drops in a tablespoonful or two of water after each meal.

are splendid in most cases but in order to reap lasting benefits, it must be given for a long time.

Calomel and the last mentioned mixture should never be fed together. If both are used, Calomel must be given first and six hours after the last powder is gone the mixture is begun.

As soon as the bad odor discontinues, checking remedies can be employed. Particulars as to these will be found in the preceding chapter.

In nearly all cases of chronic diarrhea, a change of climate is of decided favorable influence, in fact, in some cases the only thing which brings about a permanent cure.

CHAPTER XXXII.

CONSTIPATION.

The normal condition of the passage has been referred to on pages 37, 97 and 98.

If at any time the bowels move less than once a day, or if the passage of a baby under one year of age, in spite of a daily movement, is hard and crumbling, it must be regarded as constipation and set aright.

Constipation seldom happens with nursing infants. It is frequent with children fed on cow's milk and still more so with those fed on proprietary foods.

To facilitate the understanding of the following lines, we will make a distinction between constipation of nursing and constipation of hand-fed infants.

Causes: (1) In nursing infants. Faulty composition of the milk of the mother is one of them. Insufficient or faulty nourishment, constipation, bodily or mental overexertion, and all those diseases which weaken the body and make the blood poor, are likely to change the milk of the mother to the effect that the child becomes constipated.

More frequently, however, than faulty composition of the milk is bad management of the feeding the cause of constipation. If a mother is so unreasonable as to neglect the proper intervals (see page 144) and to use the breast as pacifier (see pages 72 to 74) should the baby, for some reason or another, be restless or begin to cry, it cannot fail but that the child will take more nourishment into its stomach than it can digest. The undigested rests remain in the bowels, rot, and cause first constipation and later on inflammation and diarrhea.

(2) With hand-fed infants. Here both causes, faulty composition of the milk and overfeeding, are equally frequent. All foods rich in flour and unconverted starch, such as potatoes, bread, proprietary foods, etc., if taken at improper times or in abundance, cause first constipation and later diarrhea.

A constipating effect upon both nursing and hand-fed infants have all diseases which undermine the resisting power and vitality of the body, especially poverty of blood and the English Disease. In the latter ailment constipation usually alternates with diarrhea (see page 224). The number of babies suffering from constipation is further increased by children who receive habitually of those patent medicines which are sold as laxatives and soothing syrups. This form of constipation is the result of a drug habit.

Symptoms: The most conspicuous sign of constipation is the missing of the passage. The feces are usually hard, whitish; more rarely soft, with hard lumps. The appetite is poor, the tongue coated, the sleep restless. Belching, rolling noises in the abdomen, badly smelling evacuations and gases from the bowels, indicate the abnormal decomposition and fermentation of the contents of the intestines.

Slowly the infant begins to fail. It stands still or loses in weight, becomes nervous, irritable, cries much and is sometimes subjected to more or less severe cramps.

Treatment: The removal of the trouble is not always so easy as it seems to be. There is more to it than the selection of a laxative. A laxative is for the bowels what the whip is for a tired horse; it helps for the moment, but is followed by an increase of relaxation and sluggishness. Laxatives, therefore, do not meet the demands of an ideal treatment. The more it is to be regretted that even otherwise reputable physicians, in utter neglect of their sacred duty, set a bad example to mothers by prescribing laxatives or even

patent medicines, the composition of which they are totally ignorant of, without inquiring into the cause of the abnormality. An intelligent mother should, therefore, never be satisfied with a laxative, even if prescribed by her physician. She should set to thinking and studying until she finds the cause of the trouble, and act accordingly. And not only that! She should also persist in her endeavors. Even if they seem fruitless in the beginning, she should not give up. The reward follows in most instances, although sometimes rather late.

It is best to initiate the treatment by regulating first the habits of the child and educating it to an attempt at evacuation of the bowels at regular times (see pages 66 and 67). Then comes:

(a) With nursing infants. Regulation of the number of meals (see page 144) and withdrawal of all additions of food, such as bread, cakes, potatoes, etc. When this is done, it should be ascertained with the scales how much the child takes at every meal (see page 79). If it takes more than it should have, as it may in the case of an overabundance of milk supply (see page 135), the time of nursing must be shortened; but if it gets less than is coming to it (see page 129), a fault which also may lead to constipation, it must have so much additional, properly prepared cow's milk, or rather buttermilk (see page 205), as mother's milk is lacking.

If the quantity of nourishment is regulated without sufficient improvement, its quality must be influenced. This cannot be done but by treating the mother. She must provide for a suitable nourishment for herself, exercise in the fresh air, regular movements of her own bowels, etc. (see pages 122 to 142). In doubtful cases an examination of the milk is advisable.

Besides this regulation of the quantity and quality of the milk, the child should have before each meal

some fresh, sweet cream. A teaspoonful at first and, if required, more and more at each or at every other nursing may be given until the desired effect is obtained. The cream is a natural laxative. It oils the bowels and serves at the same time as food. If no cream can be had, fresh unsalted butter, one-half to one teaspoonful once, twice or three times a day, can be substituted. Instead of cream, one or two tablespoonfuls of sour buttermilk has in a number of instances proved excellent. Cod Liver Oil also, one to two teaspoonfuls before going to bed, or a teaspoonful of fresh, sweet orange juice, three to five times a day, or one-half to one teaspoonful of extract of malt, work well.

If occasionally a laxative is required, an injection or one of the remedies enumerated at the end of this chapter will do what is necessary.

(b) With hand-fed infants. Here also the regulation of the quantity and quality of the nourishment is of prime importance. If the dilution with oatmeal (see page 184) is a little greater than normal and the addition of cream a little larger, the purpose is usually accomplished. It is best to give the extra cream separately before meals until it is found how much is needed to move the bowels. When this is learned, it may be mixed with the milk. The beginning is made with a teaspoonful and the dose increased as necessity demands.

If the increase of fat is ineffective or does not agree, an addition of limewater (see page 184) brings in some cases the desired result and should be tried.

It goes without saying that fresh, unsalted butter, Cod Liver Oil, orange juice and extract of malt, are just as recommendable for hand-fed babies as for nurslings. Fresh green vegetables and fruit sauces are also helpful where the age permits them (see page 215).

All side dishes, such as bread, potatoes, cakes or

any other nourishment rich in unconverted starch and flour and, last, but not least, all doubtful patent medicines and all soothing syrups are forbidden.

If the English Disease is in existence (see pages 224 to 230), it must be treated.

In very obstinate cases it is best to make, for a trial, a complete change and substitute for the milk buttermilk, prepared according to the directions given on page 205. The results as to the effect on the passage and the general well-being of the child are oftentimes surprising.

What was said of laxatives before, is true here also.

Injections: Injections will not cure chronic constipation. They are advised only where the bowels must be emptied quickly and completely. Further-

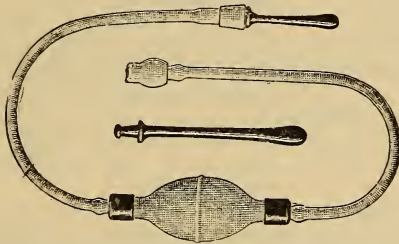


Figure 57—Syringe as it should not be used for injections.

more, they may be employed to force the passage during the dietetic treatment so long as the latter does not bring the desired result. If used for this purpose, that is, as a temporary relief, the quantity of water should be as small as possible. Large quantities will relax the walls of the intestines and increase rather than improve the difficulty. In order to make the smallest quantity most effective, an addition of castile soap or of a tea to a tablespoonful of glycerin is recommendable. For irritable intestines, the salt water described on page 249 is preferable. It works mildest, but is also least effective.

The instruments necessary for the purpose are the same as described on page 247. Syringes with a hard rubber nozzle or those shown in Fig. 57, which are operated by pressing with the hand, are dangerous and should not be used.

Laxatives: They should not be employed except in cases of emergency, when one or two thorough actions are required.

Prescription 82.

Castor Oil 2 ounces
One to two teaspoonfuls as a dose.

Prescription 83.

Syrup of Senna 2 ounces
One teaspoonful once, twice or three times a day.

Prescription 84.

Syrup of Manna 2 ounces
One teaspoonful once, twice or three times a day.

Prescription 85.

Compound Powder of Rhubarb..... 2 ounces
Two to four times a day a smaller or larger point of a knifeful mixed with water.

Prescription 86.

Syrup of Rhubarb 2 ounces
One teaspoonful once, twice or three times a day.

Prescription 87.

Light Magnesia 2 ounces
One-half to one teaspoonful mixed with water or milk. This remedy is recommendable especially if two to three hours after meals pains arise in the abdomen which cause the child to cry.

Prescription 88.

Aromatic Fluidextract of Cascara Sagrada
..... 2 ounces
From a few drops to 1-3 of a teaspoonful three times a day according to the age of the child.

This selection may suffice. Experience must teach which of the remedies is best, since, as with adults so with babies, peculiarities must be met.

Other diseases, if in existence, such as poverty of blood, anemia, English Disease, scrofula, etc., must be treated at the same time, if a lasting benefit is desired.

CHAPTER XXXIII.

COLICS.

Causes: (1) Gases in the bowels. They get there either by the swallowing of air (see page 199) or by the decomposition and fermentation of the contents of the stomach and the bowels in consequence of disturbed digestion. The same causes which lead to digestive disturbances lead, therefore, also to colics, namely, too hasty swallowing (see page 197), faulty composition of the food, too heavy and indigestible food and especially overfeeding, for the “too much” of nourishment (see page 190), which cannot be mastered by the digestive organs, rots and develops the gas.

With nurslings colics develop sometimes if the milk of the mother suddenly changes in consequence of the appearance of the monthly period or of emotions and affections of the mind, such as fright, joy, anxiety, etc.

(2) Cramps in the bowels without gases. They occur if the abdomen is kept insufficiently warm during digestion as a consequence of faulty dressing and undue exposure, or if the little ones catch cold, lie in wet diapers, get wet feet, etc. This condition is characterized by the fact that in spite of the colics no gases escape from the bowels.

Symptoms: Colics are easily recognized. The child, quiet before, becomes suddenly restless. It distorts the face, cries sharply, draws the little legs up and grasps with the hands toward the belly. Upon examination the abdomen is found to be distended and hard, and in aggravated cases arms and legs cold. After the escape of gases from the bowels, the

pains cease and the child calms down. As soon, however, as new gases develop, the performance is repeated, etc. Nervous children may get cramps in consequence of the pains, especially during the time of teething, when the nervous system is at a higher pitch and more excitable than under normal circumstances.

The conduct of the child, when hungry, may perhaps be confounded with colics. Distinct differences, however, exist. The cry of hunger is not so intense but longer and is silenced for a long time by the giving of nourishment, hands and feet are warm, the abdomen is not distended; in colics, the cry is penetrating and louder, the giving of nourishment will silence only for a short while, hands and feet are cold during the attack and the abdomen is usually distended. The escape of gases relieves the child.

Prevention: All digestive disturbances must be avoided by regulating the number, quantity and quality of the feeds according to the instructions given in previous chapters. A nursing mother should bear in mind that mental emotions (see page 122) have a bad effect upon her milk and that her own constipation and the taking of improper medicines for herself (see page 126) may bring colics to the child. Hand-fed babies should have no other nursing bottle than the "Tearless Nurser," since this is the only nursing bottle which prevents the swallowing of air. Children disposed to colics should wear a warm bandage around the abdomen, especially after meals, to aid digestion. Wet diapers, which chill the body, must be removed immediately and be replaced by dry and warm ones.

Treatment: The pain demands immediate help. Hot applications upon the abdomen will bring it. They are made either with a hot water bag or hot sand or a hot linseed poultice or a hot plate wrapped in cloths or any other hot object, so long as it is not

too heavy. In the same way the hands and especially the feet are warmed. A hot bath also will answer the purpose. To facilitate the escape of the gases, nothing is better than an injection of a few ounces of good warm soap water.

Internally should be given one drop of Spirit of Peppermint (Prescription 89) in warm water

Prescription 89.

Spirit of Peppermint 1 ounce

whenever necessary, either with or without the addition of whisky or brandy (for dose see page 239), or a pinch of Sodium Bicarbonate (Prescription 90).

Prescription 90.

Sodium Bicarbonate 1 ounce

For an immediate relief the milk of Asafetida (Prescription 91) has proved to answer well.

Prescription 91.

Emulsion of Asafetida 1 ounce
One-third to one-half teaspoonful, repeated, if necessary, once more after ten to fifteen minutes.

The following solution (Prescription 92) is splendid too.

Prescription 92.

Emulsion of Asafetida 1-2 ounce
Syrup of Manna 1-3 ounce
Spirit of Anise 1-2 drachm
Aromatic Syrup of Rhubarb..... 1 drachm
One teaspoonful as a dose. A tablespoonful of warm fennel tea, given afterwards, takes the bad taste away and increases the effect.

In those cases in which colics come on regularly about two or three hours after meals, caused by an excess of acid in the stomach, the next remedy (Prescription 93) will give a speedy relief.

Prescription 93.

Sodium Bicarbonate 40 grains
Aromatic Spirit of Ammonia..... 40 minims
Glycerin 30 minims
Peppermint Water enough to make... 2 ounces
One teaspoonful between meals.

If the above mentioned medicines do not suffice, very sensitive children may, in exceptional cases only, receive some Opium in the form of the Camphorated Tincture of Opium (Prescription 94), provided that

Prescription 94.
Camphorated Tincture of Opium (Paregoric)
.....1-2 ounce

all precautions, advised on page 246, be taken. The dose is the same as given on page 245. This Camphorated Tincture of Opium is a definite mixture, always the same and everywhere obtainable. It is, therefore, in cases where Opium must be given far better than the soothing syrups sold in the open market, since the quantity of Opium contained in these secret medicines is uncertain and uncontrollable.

In order to prevent further attacks, the cause must be looked for and removed.

INDEX.

A.

Alcoholics, after the first year, 216; influence upon child if taken by the mother during pregnancy, 219; doses in case of sickness, 239.
Ass's milk, 204.

B.

Barley gruel, as diluent for milk, 184; in diarrhea, 240.
Bath, first, 3; later, 50; oatmeal, 55; salt, 230; mustard, 237.
Beef juice, 210.
Black disease of the new-born, 38.
Bleeding, from the navel, 11; from the bowels direct after birth, 38; in inflammation of the bowels, 98, 235.
Boric Acid, how to prepare solution, 6.
Bottles for nursing, selection, 196; cleaning, 203.
Bowels, opening, 35.
Breast-feeding, importance, 103.
Breast, of the new-born, swelling direct after birth, 39; of the mother, insufficient development, 104; inflammation, 110; normal function, 128.
Breathing, 90.
Brown and black passages, 98.
Buttermilk, 205.

C.

Calomel, doses, 242.
Casein, 158.
Chemicals, addition to milk, 172.
Cholera infantum, 234.
Condensed milk, 204.
Colics, 261.
Collapsing of nipples, 198.
Constipation, 255.
Coughing and sneezing, direct after birth, 36.

Cow, must be healthy, 161; properly fed, 163; properly housed and cared for, 164; treated gently, 164.
Crying, direct after birth, 36; later, 72; consequences, 74.

D.

Delicate children, 219.
Delivery of milk, 170.
Diarrhea, acute, 234; chronic, 251.
Dilution of milk for different ages, 180.
Disinfection of milk vessels, 170.
Discharges from the navel, 13.
Dusting powders, 54 to 55.

E.

Eggs after the first year, 215.
English Disease or Rickets, 223.
Eczema on the head, 57.
Evacuations of the bowels, direct after birth, 37; in health and disease later on, 97 to 100.
Eyes, care, 19; inflammation, 19 to 21; simple catarrh, 21 to 23; specific inflammation, 23 to 32; opening direct after birth, 36; swelling of the eyelids direct after birth, 36.

F.

Farinaceous foods after the first year, 214.
Fat addition to milk, 182.
Feeding after the first year, 214.
Fruit after the first year, 216.

G.

Gelatine, how to prepare for bleeding, 11 to 12; in bloody dis-

charges from the bowels, 250; in chronic diarrhea, 253.
Genitals after birth, 34.
Goat's milk, 204.
Green passages, 98.
Gruels addition to milk, 184.

H.

Hand-feedings, 156.
Hardening of infants, 67.
Head, form after birth, 34; treatment if diseased, 57; development, 81.
Hiccough after birth, 37.
How to feed, 195.

I.

Indigestion acute, 234.
Inflammation of the navel, 8 to 11.
Injections, in catarrh of the bowels, 247; in constipation, 259.
Intervals between feeds, 195.

K.

Kefir, 209.
Kumyss, 209.

L.

Legs, position after birth, 37.
Lime water, as addition to milk, 184; in vomiting, 239.

M.

Mare's milk, 204.
Meat and meat soups after the first year, 215.
Meconium, 37.
Microbes in spoiled and impure milk, 165.
Milk, faulty composition, 138; care at home, 172; how to change according to the age of the child, 180; dilution, 180; addition of fat, 182; addition of sugar, 183; addition of gruels, 184; addition of limewater, 184; addition of Sodium Citrate, 185.

Milking, 165, 169.
Milk sugar, 158.
Milk supply, insufficient, 129; excessive, 135; faulty, 138.
Mode of life for nursing mothers, 122.
Movements of the body, 83.
Mouth, care, 59.
Muscles, development, 83.
Mustard bath, 237.

N.

Navel, inflammation, 8 to 11; bleeding, 11 to 13; discharges, 13 to 14; rupture, 14 to 18.
Navel string, care, 5 to 8; when it falls off, 5.
Nipples of the mother, insufficient development, 104; sore, 106.
Nipples of the nursing bottle, 196; how to clean, 203.
Nourishment for nursing mothers, 123.
Nursery, 42.
Nursing bottles, 196; how to clean, 203.
Nursing, forbidden, 119 to 120; first, 142; time, 145; how much, 145; how long, 147.

O.

Oatmeal gruel as addition to milk, 184.
Opium, 245.
Outdoor life, 68.

P.

Pacifiers, 59.
Passages, difference in appearance, consistency and color, 97 to 100.
Pasteurization, 174.
Peptonized milk, 207.
Physical exercise, 68.
Poisons in spoiled and impure milk, 165.
Premature birth, signs, 33; influence upon future life, 219.
Proprietary foods, 212, 213, 192.
Proteid substance, 158.

R.

Rheno's Fattening Sugar, 133; in diarrhea, 240.
Rice water, as diluent for milk, 18; in diarrhea, 240.
Rickets, 223.
Rupture of the navel, 14 to 18.

S.

Salt bath, 230.
Scales, 76.
Skin, color after birth, 34; changes after birth, 39.
Sleep, direct after birth, 40; at night, 66.
Sodium Citrate, as addition to milk, 185; in vomiting, 239.
Soothing syrups, 75.
Sugar addition to milk, 133.
Sugar of milk, 158.
Storage of milk, 169.
Sterilization, 173.

T.

Teeth, development, 84; too early and too late development, 86.

Teething sicknesses, 86.
Temperature, of first bath, 3; later baths, 50; taking, 91; normal, 94.
Thermometer for bath, 3.
Thermometer for fever, 91.
Thrush, 62.
Time of feeding, 145.
Tonics, 124.
Transmission of diseases in milk, 167.
Treatment of milk after milking, 169.

U.

Urine direct after birth, 39.

V.

Vegetables after first year, 215.

W.

Waking, beginning, 83.
Weak children, 219.
Weaning, when to wean, 149; how to wean, 151; with what to wean 152.
Weighing, 78.
Weight, increase, 80.
Wet-nurse, 155.
Whey, 210.



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